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IDENTIFIERS	Asia Pacific Region; Digital Technology; Electronic Commerce; Japan; Korea; United States

ABSTRACT

This proceedings volume from the Pacific Telecommunications Council Mid-Year Seminar includes the following presentations: "Platform and Equipment for Access Network" (Yukou Mochida); "Integrated Services Television: Digital Age TV with a Built-in Home Server" (Tatsuhito Nagaya); "Future of the Internet: Future of Telecommunications" (Anthony M. Rutkowski); "NTT's Overseas Business Strategy" (Noboru Miyawaki); "KDD's Future Strategy, Clicking on the Asia-Pacific Region" (Tohru Ohta); "Wireless Communications in Korea: The New Strategy under Competition and Open-Door Policy" (SK Telecom); "U.S. User Requirements and Industry Implications" (Lee A. Daniels); "Requests to Telecom Carriers" (Toyota Motor Corporation); "Network System in Banking Industry;" "Platform and Equipment for Multimedia Network and Its Applications" (Eiichi Yoshikawa); "Network Services in Multimedia Era" (Toru Adachi); "Viewer's Service Integration;" "The Global Network Society: Business Opportunities and Challenges: New Applications in an Era of Convergence" (Karl K. Rossiter); "What Does Internet Bring to Schools?" (Hiroshi Nakagawa); "The Business and Law of Web Commerce" (George E. Darby); and "Towards the New Age of Digital Economy: Development of Electronic Commerce and a Policy Framework" (Hisashi Yoshikawa). The seminar program and list of attendees are included. (SWC)

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ED 412 932

Collection of Presentations

PTC 1997 Mid Year Seminar
Yokohama, Japan
June 3-4, 1997

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Agenda

PTC 1997 Mid Year Seminar

Softopia Japan Projects

by

Takatoshi Ando,
Vice Chairman, Softopia Japan,
4-1-7, Kagano, Ogaki City, Gifu Pref. 503, Japan.
ando@softopia.pref.gifu.jp

Contents:

I. Regional Administration Strategy for a Globally Networked Society in the 21st Century.

1.1 Establishment of an Information Oriented Center and Creation of New Business Opportunities.

- Basic concepts of the projects:
  - (1) Evaluation of "Information Center for Production of Information Values (Joh-Joh)"
    - Farming in an agricultural society → Production in an industrial society →
      → Joh-Joh in the Information Society
      Integration of Man, Intelligence, and Information.
  - (2) Hub base in support of a Regional Information Oriented Society:
    - Information Oriented Driving Force in Quality of Life, Welfare, and Education.
    - Medicine, Culture, etc. in building an Information Oriented Society.
  - (3) Advanced Research & Development base for software:
    - Creation of an Information Oriented Industrial Park.
    - Creation of New Business Opportunities in Multimedia and Network Business.
    - Promotion of Information Orientation for Local Traditional Industries.
  - (4) Development of a 21st Century Information Oriented City and of a Core Center:
    - Creation of a Inland Media Port.
    - New point of view in Public Investment.
    - Global Information focused Hub City.
  - (5) Core Center for Global Complex:
    - Expanding a borderless structure via the Internet.
    - Expansion of Overseas Tactics.

II. Four Primary Functions and Active Projects of Expansion:

- (1) Talent Cultivation and Education Training in raising an Information Society.
  - Establishment of the International Academy of Media Arts and Sciences.
    → Founded April 1, 1996 (Cultivation and Education Training of Multimedia).
    → Creator: Boundary between Science and Art.
  - Cooperation with Educational Organizations such as Universities.
  - Talent Cultivation and Education Training.
- (2) Research and Development of High Information Science:
  - Research and Development cooperated with Industries, Administrations, and Universities.
  - Research and Development with major Universities abroad.
  - Driving Force of the Piecere Project (Information Oriented Promotion for Local Traditional Industries).
  - Establishment of Gifu Prefecture Multimedia Collaborative Research Center.

(3) Creation of Information Oriented Demand and New Business Opportunities:
- Driving Force of a 21st Century Information Oriented City.
- Cultivation and Support of Venture Business.
- Active Investment in making an Advanced Information Oriented Base.
- Establishment of Gifu Prefecture Regional Information Oriented Industries.
  - → Founded November, 1995
  - → 310 Companies
- Diversified Conference of Information Exchange.
- Establishment of Gifu Prefecture Information Orientation Consultation Room.

(4) Expansion of High Information Dispatching Functions:
- Expansion of Softopia Japan Global concept.
- Construction of Internet and Softopia LAN.
- Establishment of Gifu Prefecture Super High Way Society.
- Establishment of Softopia Japan Information Library and Media Plaza.
- Organization of Symposium, Events, and Research Societies.
- Establishment of International Information Society.
- Establishment of Regional Information Orientation Consultation.

III. Points of Processing Projects and Subjects for Future Consideration:

(1) Compatibility, Compliance, and Preciseness in flexibly and efficiently dealing with alterations.
(2) Driving Force of Digital Evolution and Establishment of a Bilateral Network in Industries, Administrations, and Universities.
(3) Motivation of Industries for Promotion and Completion of Support Conditions.
(4) Vivid Contribution in Regional Information Orientation.
(5) Other Considerations.

PTC 1997 Mid Year Seminar ｱﾝｹｰﾄ

今後の参考のため、ｱﾝｹｰﾄにご協力のうえ、改善要望等ﾌﾘｰｺﾒﾝﾄ欄にお書きください。

PTC ： a. 会員 b. 非会員 [ ]

業種：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

(1) セミナーの全体構成について
a. よい b. ふつう c. 改善が必要(フリーコメント欄へ) [ ]

(2) セミナーの運営全般について
a. 満足 b. 不満足 c. 改善が必要(フリーコメント欄へ) [ ]

(3) 会場 （パシフィコ横浜）について
a. よい b. 適当 c. 改善が必要(フリーコメント欄へ) [ ]

(4) 同時通訳について
a. よい b. 適当 c. 改善が必要(フリーコメント欄へ) [ ]

(5) フリーコメント

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ありがとうございました。

PTC 1997 Mid Year Seminar Comments Sheet

PTC : a. PTC member b. non-member [ ]

Type of industry : ______________________

(1) Program of the Seminar
a. good b. fair c. poor [ ]

(2) Operation of the Seminar
a. good b. fair c. poor [ ]

(3) Venue (Pacifico Yokohama)
a. good b. fair c. poor [ ]

(4) Simultaneous interpretation
a. good b. fair c. poor [ ]

(5) Comments

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Thank you.

プログラム	評価	ご意見・ご感想
基調講演		
「グローバル情報社会の発展と政策」 郵政省　大臣官房国際部長 長谷川　憲正氏	良い←－－－－－→悪い 1 2 3 4 5	
「グローバル通信ネットワークの将来」 ジェネラル・マジック　副社長 アンソニー・ルトコウスキー氏	良い←－－－－－→悪い 1 2 3 4 5	
セッション1”電気通信インフラストラクチャー”		
「NTTの国際事業戦略」 NTT　副社長 宮脇　陞氏	良い←－－－－－→悪い 1 2 3 4 5	
「アジア太平洋地域を中心としたKDDビジネスの将来戦略」 KDD　副社長 太田　亨氏	良い←－－－－－→悪い 1 2 3 4 5	
「韓国における無線通信：自由競争時代の新戦略」 SKテレコム副社長 睦　楨來氏	良い←－－－－－→悪い 1 2 3 4 5	
「米国におけるユーザーの要望と産業界の対応」 日本AT&T　社長 リー・ダニエルズ氏	良い←－－－－－→悪い 1 2 3 4 5	
「通信事業者に対する要望」 トヨタ自動車　システム企画部副部長 永目　賢助氏	良い←－－－－－→悪い 1 2 3 4 5	
「バンキング・ネットワーク・システムの動向と情報通信事業者への期待」 日本興業銀行　システム管理部長 西脇　文男氏	良い←－－－－－→悪い 1 2 3 4 5	
セッション2”プラットフォームと関連機器”		
「マルチメディアネットワークのプラットフォームと関連機器及びその応用」 NEC　常務取締役 吉川　英一氏	良い←－－－－－→悪い 1 2 3 4 5	
「アクセスネットワークにおけるプラットフォームと関連機器」 富士通研究所　取締役 持田　侑宏氏	良い←－－－－－→悪い 1 2 3 4 5	
「将来の家庭用大型平面ディスプレイ」 NHK放送技術研究所　研究主幹 吉川　重夫氏	良い←－－－－－→悪い 1 2 3 4 5	
「ネットワークコンピューティング・プラットフォーム」 日本IBM　ネットワークコンピューティング事業推進計画部長 沢田　智明氏	良い←－－－－－→悪い 1 2 3 4 5	
「マルチメディア時代のネットワークサービス」 NTT通信網総合研究所　主幹研究員 安達　徹氏	良い←－－－－－→悪い 1 2 3 4 5	
セッション3”コンテンツとアプリケーション”		
「デジタル放送時代におけるISTV」 NHK放送文化研究所　研究主幹 長屋　龍人氏	良い←－－－－－→悪い 1 2 3 4 5	
「融合時代の新アプリケーション」 テレビジョン・ニュージーランド カール・ロシータ氏	良い←－－－－－→悪い 1 2 3 4 5	
「マルチメディア教育」 横浜市　教育委員会事務局情報教育課 中川　一史氏	良い←－－－－－→悪い 1 2 3 4 5	
「ウェブコマース・ビジネスと法的課題」 ジョージ・ダービー法律事務所 ジョージ・ダービー	良い←－－－－－→悪い 1 2 3 4 5	
「デジタル経済の時代に向けて」 通産省　機械情報産業局情報政策企画室長 芳川　恒志氏	良い←－－－－－→悪い 1 2 3 4 5	
「岐阜県ソフトピア・プロジェクト」 ソフトピアジャパン　副理事長 安藤　隆年氏	良い←－－－－－→悪い 1 2 3 4 5	

PROGRAM	EVALUATION	COMMENTS
KEYNOTE SPEECHES		
Norimasa Hasegawa Director-General, International Affairs Department, MPT	good—poor 1 2 3 4 5	
Anthony Rutkowski Vice President, General Magic	good—poor 1 2 3 4 5	
SESSION 1 "Telecommunications Infrastructure"		
Noboru Miyawaki Senior Executive Vice President, NTT	good—poor 1 2 3 4 5	
Tohru Ohta Executive Vice President, KDD	good—poor 1 2 3 4 5	
Jung L. Mok Senior Executive Vice President,SK Telecom	good—poor 1 2 3 4 5	
Lee A. Daniels President and CEO, AT&T Japan	good—poor 1 2 3 4 5	
Kensuke Nagame TOYOTA	good—poor 1 2 3 4 5	
Fumio Nishiwaki General Mgr., Systems Department, IBJ	good—poor 1 2 3 4 5	
SESSION 2 "Platform and Equipment"		
Eiichi Yoshikawa Senior Vice President, NEC	good—poor 1 2 3 4 5	
Yukou Mochida Member of the Board, Fujitsu Laboratories	good—poor 1 2 3 4 5	
Shigeo Yoshikawa Exec. Research Engineer, Science & Technical Research Lab, NHK	good—poor 1 2 3 4 5	
Tomoaki Sawada IBM Japan	good—poor 1 2 3 4 5	
Toru Adachi Director, Telecommunication Network Lab, NTT	good—poor 1 2 3 4 5	
SESSION 3 "Contents and Applications"		
Tatsuhito Nagaya Exec. Researcher, Broadcasting Culture Research Inst., NHK	good—poor 1 2 3 4 5	
Karl Rossiter Television New Zealand	good—poor 1 2 3 4 5	
Hitoshi Nakagawa City of Yokohama	good—poor 1 2 3 4 5	
George E. Darby Law offices of George E. Darby	good—poor 1 2 3 4 5	
Hisashi Yoshikawa Director, MITI	good—poor 1 2 3 4 5	
Takatoshi Ando Vice Chairman, Softopia Japan	good—poor 1 2 3 4 5	

講演者プロファイル ＊ Speakers' Profile

横川　日榕　太平洋電気通信協議会（ＰＴＣ）副理事長

１９５５　九州大学電気通信工学科卒・日本アイ・ビー・エム株式会社入社／１９８７　産業技術渉外担当理事／１９９３　国際情報通信コンサルタント代表取締役

Hiyoshi Yokogawa Vice President, Pacific Telecommunications Council

1955 Graduated from Telecommunications Engineering Department, Kyushu University, ・Joined IBM Japan Ltd. /1987 Director of Commercial & Industry Relations/1993 President, InfoCom Consultancy International Ltd.

野田　聖子　郵政省　郵政政務次官

上智大学外国語学部卒／１９８７　岐阜県議会議員／１９９３　衆議院議員

Seiko Noda State Secretary for Posts and Telecommunications

Graduated from Faculty of Foreign Studies, Sophia University/1987 First elected to the member, Gifu Prefectural Assembly/1993 First elected to the House of Representatives

ジェーン・ハード　ＰＴＣ理事長　Severance International 社社長

１９８４　米国政府商務省 National Telecommunications and Information Administration 戦略計画部長／１９９７　世界電気通信開発会議　米国代表／１９９７　ＰＴＣ理事長

Jane Newcomb Hurd President, Severance International Inc.　President of PTC

1984 Director of Strategic Planning in the Office of International Affairs of the NTIA/1994 Distinguished White House Private Sector Representative on U.S. delegation to the World Telecommunications Development Conference/1997-President of PTC

長谷川　憲正　郵政省　大臣官房国際部長

１９６７　東京大学法学部卒・郵政省採用／１９８３　電気通信政策局国際課長／１９９０　大臣官房国際課長／１９９２　大臣官房審議官　／１９９５から現職

Norimasa Hasegawa Director-General, International Affairs Department, Ministry of Posts and Telecommunications

1967 Graduated from Faculty of Law, the University of Tokyo・Entered MPT/1983 Director, International Affairs Division, Telecommunications Policy Bureau/1990 Director, International Policy Coordination Division, Minister's Secretariat/1992 Assistant Vice-Minister/1995- Current Position

アンソニー・マイケル・ルトコウスキー　ジェネラル・マジック社　副社長

インターネットおよび情報通信の世界で、もっとも著名なリーダー、戦略家／１９９１　インターネット・ソサエティー財団を共同設立／１９９４　事務局長／１９９２　スプリント・インターナショナル社・経営企画グループ・技術評価担当ディレクター／１９９６　ジェネラル・マジック社

Anthony Michael Rutkowski Vice-President of Internet Business Development, General Magic

One of the most visible and well-known global leaders and strategists in the Internet and telecom world today/Named Executive Director of the Internet Society in February 1994 after co-conceiving the Society in 1991/1992 Director of Technology Assessment in the Strategic Planning Group of Sprint International/1996 Joined General Magic

公文　俊平　国際大学グローバル・コミュニケーション・センター所長

１９５７　東京大学経済学部卒／１９５９　東京大学大学院社会科学研究科理論経済学専門課程修士課程終了／１９６７　東京大学教養学部助教授／１９６８　米国インディアナ大学経済学部大学院終了　Ｐｈ．Ｄ．取得／１９７８　東京大学教養学部教授／１９９０　国際大学教授／現職／１９９３　現職

Shumpei Kumon Executive Director, Center for Global Communications, International University of Japan

宮脇　陞　日本電信電話株式会社　代表取締役副社長　国際本部長、国際本部技術輸出管理室長兼務　ﾏﾙﾁﾒﾃﾞｨｱ推進本部長兼務　ﾏﾙﾁﾒﾃﾞｨｱﾈｯﾄﾜｰｸｻｰﾋﾞｽ事業本部長兼務
１９５９　北海道大学工学部電気工学科卒・日本電信電話公社入社／１９８８　取締役　関東総支社長／１９９２　常務取締役　研究開発技術本部長／１９９６　代表取締役副社長　マルチメディア推進本部長、国際部長兼務／同年１２月から現職

Noboru Miyawaki Senior Executive Vice President Senior Executive Manager, International Affairs HQ Senior Executive Manager, Multimedia Service Promotion HQ Senior Executive Manager, Multimedia Network Service Sector
1959 B.E. degree in Electric Engineering at Hokkaido University・Joined Nippon Telegraph and Telephone Public Corporation/1988 Senior Vice President, General Manager, Kanto Telecommunications Service/1992 Executive Vice President, Senior Executive Manager, Research and Development HQ/1996 Senior Executive Vice President, Senior Executive Manager, Multimedia Service Promotion HQ, Senior Executive Manager, International Affairs Department/December 1996- Current Position

太田　亨　国際電信電話株式会社　代表取締役副社長
１９６２　東京大学工学部卒・国際電信電話株式会社入社／１９８９　国際部長／１９９１　取締役ネットワーク開発本部海底線部長／１９９４　常務取締役ネットワーク本部海底線部長／１９９６　代表取締役副社長

Tohru Ohta Executive Vice President, Supervision of Network Headquarters, Kokusai Denshin Denwa Co., Ltd. (KDD)
1962 B. Eng. the University of Tokyo Joined Kokusai Denshin Denwa Co., Ltd./1989 Director, International Affairs Department/1994 Managing Director/1966- Current Position

睦　楨來　ＳＫテレコム　副社長
コロンビア大学にてＭＢＡ取得、公認会計士／テハン・テレコム社専務取締役を経て、１９９７　ＳＫテレコム社副社長兼イリディウム・コリア社社長

Jung L. Mok Senior Executive Vice President of SK Telecom
Received MBA degree from Columbia University, Certified Public Accountant, Member of the American Institute of Certified Public Accountants, New York State Society of Certified Public Accountants/Served as Senior Managing Director and COO of Taehan Telecom Limited/1997 Senior Executive Vice President of SK Telecom and President and CEO of Iridium Korea, a wholly owned subsidiary of SK Telecom

リー・ダニエルズ　日本ＡＴ＆Ｔ　社長
Brigham University卒・上智大学にて修士課程修了／１９８４　ＡＴ＆Ｔ　ロサンゼルス入社／日本勤務は、２度目

Lee A. Daniels President of AT&T Japan Limited
Graduated from Brigham Young University with a Bachelor of Science degree/Received Master of Arts degree in International Business from Sophia University in Tokyo/Joined AT&T as an Account Executive in Los Angeles/1994 Returned to Japan for the second time in his career

永目　賢助　トヨタ自動車　システム企画部副部長
１９６９　慶応義塾大学工学部機械学科卒・トヨタ自動車販売株式会社入社／１９９２　ＣＩＳ企画部主査／１９９６　現職

Kensuke Nagame System Planning Division, TOYOTA
1969 Graduated from Keio University・Joined TOYOTA/1992 Manager, Communication Information System/1996- Current Position

西脇　文男　日本興業銀行　システム管理部部長
１９６８　東京大学経済学部卒・日本興業銀行入社／１９９３　興銀証券取締役／１９９５　現職

Fumio Nishiwaki General Manager, Systems Department, The Industrial Bank of Japan (IBJ)
1968 Graduated from the University of Tokyo・Joined IBJ/1995- Current Position

吉川　英一　日本電気株式会社　常務取締役

京都大学卒／ＮＥＣにてソフト開発部門でマネジメント職を歴任／ＰＣ－ＶＡＮとＭＥＳＨインターネット・サービスのＢＩＧＬＯＢＥへの統合を担当

Eiichi Yoshikawa Senior Vice President, NEC Corporation

Graduated from Kyoto University, Department of Electrical Engineering/Held a number of senior management responsibilities in NEC's software development operations/Was responsible for the integration of PC-VAN and MESH Internet service into BIGLOBE Integrated Personal Multimedia Service

持田　侑宏　株式会社富士通研究所　取締役兼ネットワークシステム研究所長

１９６４　東京大学工学部電気工学科卒・富士通株式会社入社／１９６５　ミュンヘン工科大学留学／１９８８　東京大学工学博士・電送事業部部長／１９９６　現職

Yukou Mochida Member of the Board, Fujitsu Laboratories Limited, General Manager of Network Systems Laboratories

1964 Graduated from the University of Tokyo・Joined Fujitsu Limited/1965 Studied at Munich Institute of Technology/1988 Received Dr. Eng. from the University of Tokyo/1994 Board Member of Fujitsu Laboratories Limited

吉川　重夫　ＮＨＫ放送技術研究所　研究主幹

Shigeo Yoshikawa Executive Research Engineer, Science & Technical Research Lab, NHK

沢田　智明　日本アイ・ビー・エム株式会社　ネットワーク・コンピューティング計画部長

Tomoaki Sawada Director, Strategy & Plan, Network Computing, IBM Japan Ltd.

安達　徹　日本電信電話株式会社　通信網総合研究所　主幹研究員

１９７４　東京工業大学工学部理工学研究科電気工学専攻　修士課程修了・日本電信電話公社入社／大規模集積回路の設計自動化技術の研究開発／１９９５　現職

Toru Adachi Director of Strategic Planning and Promotion Project, NTT Telecommunication Network Laboratory Group

1974 Received Master of Science Degree from The Tokyo Institute of Technology・Joined NTT Electronic Communication Laboratories/Responsible for the development of various kind of computer aided design and testing systems for VLSIs/1995- Current Position

長屋　龍人　ＮＨＫ研究主幹

東京大学大学院社会学研究科修士課程修了／１９６２　ＮＨＫ入局／ニュース・報道番組ディレクター／ＮＨＫスペシャル番組部チーフ・プロデューサー／ＮＨＫシンガポール支局長／衛星放送番組の編成統括エグゼクティブ・プロデューサー／１９９３　現職

Tatsuhito Nagaya Executive Researcher, NHK

1962 Joined NHK/Director of news and other programs/Chief Producer of Special Programs/NHK Bureau Chief in Singapore/Executive Producer in charge of satellite broadcasting programming section/1992 Received Master's Degree in sociology from the University of Tokyo: Institute of Socio-information and communication studies/1993- Current Position

カール・ロシータ　ニュージーランドＴＶ　ビジネス開発部長

Karl K. Rossiter Business Development Manager, TVNZ Distribution, Television New Zealand Limited

Specializes in commercial applications appropriate to the new communications technologies

中川　一史　横浜市教育委員会　情報教育課

横浜国立大学教育学部卒・教職／横浜国立大学大学院教育学研究科終了／横浜市立中川西小学校教諭

Hitoshi Nakagawa Education Committee, City of Yokohama

Graduated from Yokohama National University/Tought at Yokohama Nakagawa Nishi Elementary School

ジョージ・ダービー　ジョージ・ダービー法律事務所、テレポート・アジア社長

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George E. Darby Law Offices of George E. Darby, President, Teleport Asia

Practices technology law, the provision of legal counsel to technology businesses. Also of a counsel to a patent and trademark. Teleport Asia provides information consultancy in Asia.

芳川　恒志　通商産業省機械情報産業局情報政策企画室長

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Hisashi Yoshikawa Director, Ministry of International Trade and Industry (MITI)

1981 B.A. in Law, University of Tokyo/M.P.A., John F. Kennedy School of Government/Visiting Scholar, Graduate School of International Relations & Pacific Studies, University of California in San Diego/1981 Nuclear Energy Industry Division, MITI/1990 First Secretary, Embassy of Japan in Iran, Ministry of Foreign Affairs/1994 Director, International Petroleum Affairs, Petroleum Department, MITI/1996- Current Position

安藤　隆年　岐阜県商工労働部参与　財団法人ソフトピアジャパン副理事長

１９６５　日本福祉大学社会福祉学部卒・岐阜県庁入庁／１９９１　企画部ソフトピアジャパン建設推進室長／１９９３　企画部次長兼土木部花フェスタ推進局次長／１９９６　現職

Takatoshi Ando Executive Advisor, Commerce, Industry and Labor Department of Gifu Prefecture and Vice President, Softpia Japan

1965 Graduate of Nihon Fukushi University・Employment at Gifu Prefectural Office/1991 Director of Softpia Japan Project Planning Office/1993 Deputy Executive Director, Planning Department, Deputy Executive Director, Flowerfest Project Planning Department/1996- Current Position

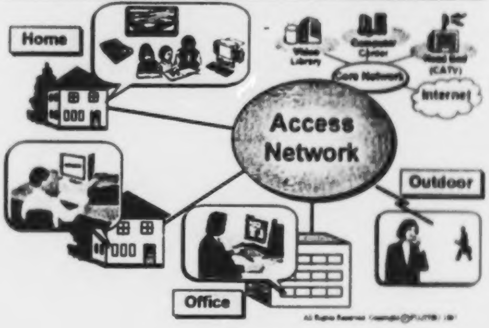
FUJITSU

Platform and Equipment for Access Network

June, 1997
FUJITSU LABORATORIES LTD.
Yukou Mochida

Access System Brings Multimedia World

FUJITSU


Home
Video Library
Computer Center
Head End (CATV)
Core Network
Internet
Access Network
Outdoor
Office

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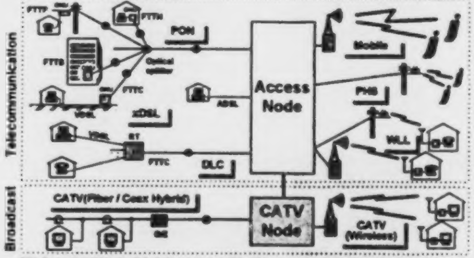
Access Network

FUJITSU


Wireline system
Wireless system
Telecommunication
Broadcast
FTTP
ONU
FTTH
PON
FTTB
Optical splitter
FTTC
VDSL
ADSL
xDSL
RT
FTTC
DLC
Access Node
Mobile
PHS
WLL
CATV(Fiber / Coax Hybrid)
O/E
CATV Node
CATV (Wireless)

PON : Passive Optical Network, DLC : Digital Loop Carrier, WLL : Wireless Local Loop, ONU : Optical Network Unit,
O/E : Optical / Electrical Converter, ADSL : Asymmetric Digital Subscriber Line, VDSL : Very high data rate Digital Subscriber Line,
FTTH : Fiber To The Home, FTTP : Fiber To The Pole, FTTB : Fiber To The Building, FTTC : Fiber To The Curb/Cabinet
● Optical path, ☖ Coax path

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PON (Passive Optical Network)

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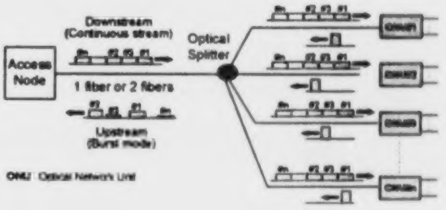
Downstream
(Continuous stream)
#n #2 #3 #1
Access Node
1 fiber or 2 fibers
#2 #3 #1 #n
Upstream
(Burst mode)
Optical Splitter
ONU#1
ONU#2
ONU#3
ONU#n

ONU : Optical Network Unit

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PON Based Access Systems

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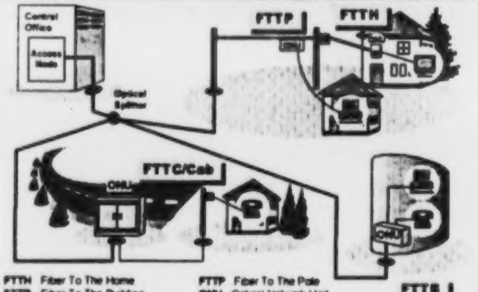
Central Office
Access Node
Optical Splitter
FTTP
ONU
FTTH
FTTC/Cab
ONU
ONU
FTTB

FTTH Fiber To The Home
FTTB Fiber To The Building
FTTC/Cab Fiber To The Curb/Cabinet
FTTP Fiber To The Pole
ONU Optical Network Unit

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Main Equipment and Technology of PON

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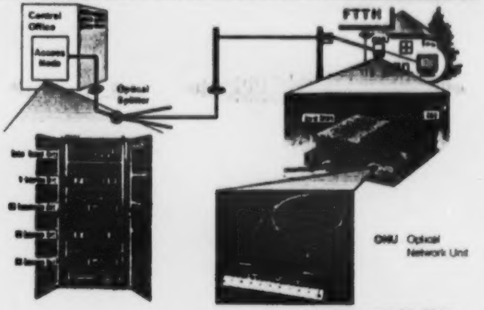
Central Office
Access Node
Optical Splitter
FTTH

ONU Optical Network Unit

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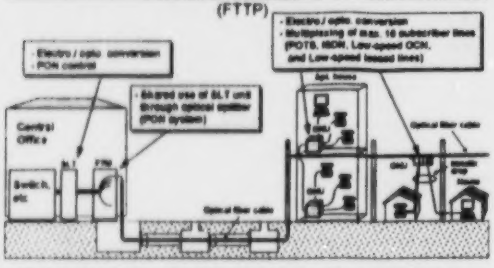
New Optical Access System (π System)

FUJITSU

(FTTP)



- Electro / optic conversion
- PON control
- Shared use of SLT unit through optical splitter (PON system)
- Electro / optic conversion
- Multiplexing of max. 10 subscriber lines (POTS, ISDN, Low-speed OCN, and Low-speed leased lines)
Central Office
Switch, etc.
SLT
FTM
Optical fiber cable
Apt. house
ONU
Optical fiber cable

POM : Passive Optical Network
FTM : Fiber Termination Module
SLT : Subscriber Line Terminal
FTTP : Fiber To The Pole
ONU : Optical Network Unit
OCN : Open Computer Network

(Source : NTT)

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FSAN Activities

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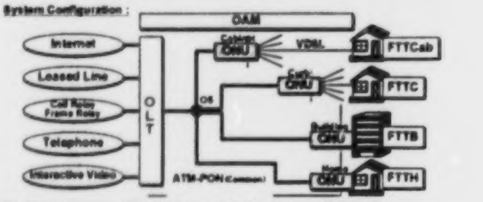
(FSAN : Full Services Access Networks)

Outline : Pre-standardization activities of broadband optical access network by World's major operators and vendors [Established in June, 1995]

Objective : Cost reduction by global unification of system and component specification

System Configuration :



OAM
Internet
Leased Line
Cell Relay Frame Relay
Telephone
Interactive Video
OLT
OS
Cabinet ONU
VDSL
FTTCab
Curb ONU
FTTC
Building ONU
FTTB
Home ONU
FTTH
ATM-PON (Common)

OLT : Optical Line Termination
ONU : Optical Network Unit
VDSL : Very high data rate Digital Subscriber Line
OAM : Operation, Administration and Maintenance
OS : Optical Splitter

(Source : NTT Open Network 1996-10)

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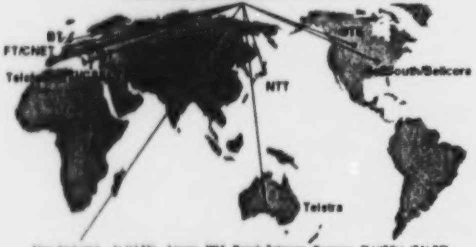
Participants in FSAN

FUJITSU



FSAN Management Committee
BT
FT/CNET
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DTS
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Manufacturers : ALCATEL, Ascom, BBT, Bosch Telecom, Ericsson, FUJITSU, ITALTEL, Lucent Tech, NEC, NT, SAT, Siemens

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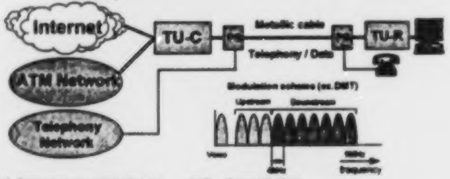
High-speed Metallic Transmission (ADSL/VDSL)

FUJITSU

- Digital transmission using bandwidth of tens kHz to hundreds MHz over existing metallic cables
  - Combination of various speeds and distances, depending on metallic cable characteristics
  - Early introduction of multimedia services (highspeed internet, VOD, etc.)



Internet
ATM Network
Telephony Network
TU-C
PS
Metallic cable
Telephony / Data
PS
TU-R
Modulation scheme (ex.DMT)
Upstream
Downstream
Voice
Frequency

TU-C : Transceiver unit, central office end
TU-R : Transceiver unit, remote terminal end
DMT : Discrete Multitone
PS : POTS Splitter

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ADSL/VDSL Application

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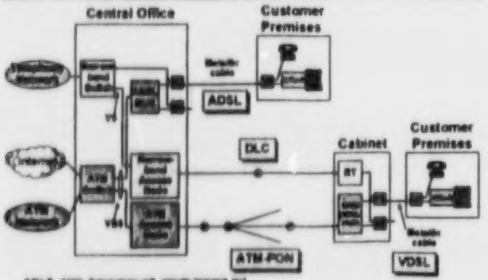

Central Office
Customer Premises
Metallic cable
ADSL
DLC
Cabinet
Customer Premises
RT
ATM-PON
Metallic cable
VDSL
Internet
ATM Network

ATU-R : ADSL Transceiver unit, remote terminal end
VTU-R : VDSL Transceiver unit, remote terminal end

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Conclusions

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- **Multimedia Communication Platform by Access Systems**
  - PON
  - ADSL/VDSL
  - DLC
- **Economical Equipment by World-wide Commonality**
- **Overcoming Cost Barriers by Technical Breakthroughs**

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Integrated Services Television: Digital Age TV with a Built-in Home Server

ISTV will open a varitey of contents and apilications in digital broadcasting.

Tatsuhito Nagaya,
Executive Researcher, NHK Broadcasting Culture Research Institute
Tokyo, Japan (URL: http://www.nhk.or.jp/bunken/)

Abstract:

Television, one of the greatest inventions of this century, has led to a giant media industry which exerts major influence on society; it is also the most characteristic cultural development of the 20th century. But TV is a passive medium, to be enjoyed by an unspecified number of people. This is sometimes a cause for ridicule. But because of such wide availability, TV has become the leading form of media, used by the largest number of people.

Amid the growing trend toward the use of digital technology, TV tends to be regarded as comparatively dull, because it lacks an interactive system. There is even speculation that the current form of TV will be taken over by PC-related Internet-type TV, through the fusion of broadcasting and communication systems. Is interactive TV really an inevitable step ? If so, how is TV to adopt interactivity ?

It is, of course, a matter of time until digital technology transcends the barrier of cable and wireless technologies and combines them to give birth to an "ultimate TV" with both individual and interactive functions.

It seems inevitable that the current form of TV will eventually evolve into a visual integrated portable terminal, that is, a receiver capable of a variety of communications involving a personal computer, fax, printer and TV telephone.

The problem is how successfully TV entrepreneurs will be able to cope with the new situation, once the system barriers are removed through the fusion of the digital environment, broadcasting, communications and computing. What services will they be able to provide ? In which directions should individual selectivity be expanded and to what extent should it be absorbed ?

Detailed study of information activity reveals major differences in the goals, quantity, frequency and quality between the individual, selective type of such activity and the passive, moderate type such as TV-viewing (**Figure 1**). This means the point is not rivalry between personal computers and TV. Rather, the multimedia-type of TV, evolved from a form meeting mass demand and the PC related individual order-type media, capable of selecting and referring to individual information at any time and as much as possible, must be developed hand in hand for the next generation. However, differences between the two types of information media should not be neglected. To overemphasize individual selectivity and interactivity when developing mass-oriented TV into Internet-type TV, or into a media that simply unifies various functions, undermines human interfacing and is not good for either viewers or TV enterprisers.

This author proposes the idea of Integrated Services TV (ISTV) as an evolved form of television that absorbs individual interactive functions into the current form of TV after the digitization of TV-related media.

ISTV is a multimedia-type TV with a built-in home server. It has three major characteristics:

1) **Its built-in server would enable viewers to instantly call up news and other information which would be constantly updated automatically through home interactivity.**
2) **Its media fusion capability would enable joint use of TV with other media.**
3) **Its learning ability would make TV more "intelligent."**

Naturally, ISTV could function as a personal computer with a large Hi-Vision screen by simply switching the mode. This evolutionary form of TV would be remote-controlled, easy to handle, reasonably priced and accessible. It would also be interactive, while taking advantage of TV's current features.

This idea is based on the Constraints-Programmed Macro-Model of Information Selection, which analyses macro and micro information activities (**Figure 2**). In short, people are not designed to take in information endlessly; their information activity is limited by the constraints of disposable time, money and interest. Therefore, Integrated Services TV (ISTV) has, as its basic framework, a combination of the information activities pursued by the largest number of viewers, with arrangement of quantity and types. Besides being inexpensive and easy to use, ISTV would be most likely to lay a social foundation for information-related infrastructure capable of the universal supply of news and information.

Broadcasters, too, would find ISTV a comparatively inexpensive investment, allowing them to provide multi-window services for their software and to make step-by-step advances into the multimedia age with comparative ease.

With the TV broadcasters' decision to use a TV with a built-in home server as a standard TV receiver of the digital age, TV will probably revive as node for all types of media, a primary access medium to information and entertainment and also a basic form of infrastructure for the newly extended distribution of information.

1. Details of Services Cannot Be Decided Until a System is Selected

Details about software for new services in the multimedia age cannot be determined only on the basis of their technological functions, characteristics features or creators' ability. First, decisions must be made on such factors as media (transmission means), the household receiver or terminal, the main broadcaster, and costs. Until that is done, it will be impossible to create concrete images of software, forms of services and time-related service types.

Arguments and discussions under way today are so concerned with methods of transmission and the separate technological development of presentation methods that they lack the requirements for balanced and detailed discussions of the new services for multimedia-type TV. Among the most important requirements is to determine the functions of a household terminal and its standardization. The future of media services depends on the extent to which a standard multimedia-type TV is to be equipped with additional functions, including those of a personal computer, laser disks, printer and communication devices.

Regarding the current broadcasting media, it is advisable that the search for the identity of broadcasting should be continued in all seriousness, rather than being swayed back and forth by discussions on multimedia technologies and functions. The definition of broadcasting as "wireless transmission for an unspecified number of people" was based on the physical characteristics of broadcast waves, reflecting the technological standard of the past. Many goals of broadcasters still remain to be achieved. But the multimedia technologies hold the key to solve some of the problems they face.

2. TV as the Node for Electronic Media

From the viewpoints mentioned above, integrated services digital broadcasting (ISDB) can be proposed as a social system capable of providing multimedia-type broadcasting in an integrated manner and at low cast NHK's future visions of broadcasting and other media described in its "guideline for mid to long term administration" (issued in January, 1995) include an integrated receiving terminal display with 1,125 scanning lines. What is envisioned here are integrated services ranging from terrestrial, satellite, CATV and digital Hi-Vision broadcasting to facsimile, high-function teletext, telemusic, PCM audio broadcasting and a program guide all presented through the node of an integrated display screen.

3. Integrated Services Television (ISTV) as Highly Evolved TV

Personal computers and other multimedia equipment for home use have made remarkable progress as individual tools. TV-related media, on the other hand, have not been generally receptive to absorbing individual, interactive functions.

So, we examined the possibility of developing individual, interactive multimedia functions into a mass selection receiver-type TV. In short, the goal is highly evolved TV of the multimedia-type

(1) Evolving TV

Unlike personal computers, TV is not an extension of what's called reference communication, designed to be called up item by item at any time viewers like. ISTV aims to identify the most common information behavior on a daily basis and to become a simpler, more convenient and more accessible medium by linking media with media, applications with applications and software with software of any sort, while providing a common basis for reference.

70 to 80% of Needs to be Covered

Menu Screen (right photo) shows one example of ISTV, a combination of a receiver and services for the digital broadcasting age, which was on display at the technology exhibition of NHK Broadcasting Science and Technology Laboratories held in May, 1996. The basic concept of this multimedia-type terminal for household use is an application of my "constraints-programmed macro-model of information selection." It is impossible for the mass reception-type media alone to provide services that can be called up and accessed by every user.

TV is not a personal computer and is not made to cater to people's desires 100%. Even so, TV should aim at covering 70 to 80% of most people's information behavior, in terms of application and software **(Figure 3)**

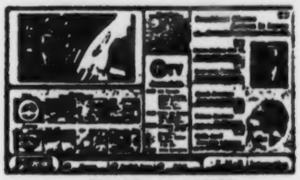
(2) Media Fusion : TV for inter-media use

Multimedia type TV would connects a large variety of media to enhance their conveniency. The idea is to make the TV terminal the node of an electronic-related network. Linkage with electronic newspapers and the Internet has become possible. Considering combined use with electronic newspapers, the full mutual use of the display is only possible with ATV which has high-quality picture resolution. The Current TV is not able to present many characters clearly on the screen.

(3) Personal TV :
TV with a built-in self-editing function

It is quite natural for TV to make best use of computer functions. A personal TV would automatically identify its user, be able to learn his usage habits at certain times and days of the week, and also have a built-in self-editing function to choose various programs and information

4. Menu Screen,Category Screen, Item Screen



Menu Screen of ISTV

http://www.strl.nhk.or.jp/newstopics/mmlb/jp-fm/m3-j.html

The above concept has led to the appearance of a multimedia-type TV with the following features:

An initialization screen like that of a personal computer can be seen on the TV screen. The menu has several windows that account for 60 to 70% of the basic needs of media users. The menu picture is designed to give users an overview of what's available, by staying on the screen for 7 to 15 seconds. (Users set their own convenient length of time.) If a user does nothing, the main picture appears automatically. In the menu picture are shown a TV newspaper with various categories of automatically updated news.

If users want to read some article in more detail after looking at the TV newspaper, they can call up that particular news item from the server and read it on a separate page. If a user needs an overview of a variety of news of different types, a category page can be called up for general, economic, international, sports, or culture/entertainment news, etc.. After that, users can further select individual news items or click back to the electronic newspaper or other internet services.

With the menu screen, category screen and individual news item page, multimedia TV will be able to cover daily the 100 to 200 news items transmitted by the current TV and the 400 to 600 headline stories of a newspaper. In other words, 70 to 80% of the general viewers' needs can be met.

(Those who want more specialized news and information in greater quantity could obtain that by concluding a special subscription agreement.)

Installation of Home Interactive Systems

It is assumed that ISTV will have a built-in home server with a storage capacity of about 10 hours. Considering that 90% of Japanese households today own video tape-recorders, it is not unreasonable to assume that the combination of TV and a home server will spread in a few years time. In the more distant future, the server function will be extended to about 10-100 hours.

Broadcasters will be able to conduct automatic transmissions with an automatic updating system. Currently, the following six functions can be assumed for the ISTV for household use.

1) **"Anytime" news** (including headline news, sports news, with automatic 24 hour updating of major categories.)
2) **Anytime weather forecasts**
3) **Anytime program schedule and guide** (showing programming of other media)
4) **Anytime video** (automatic recording of a variety of videos, which can be called up on the screen with the touch of a key.)
5) **Latest Menu** (constant indication of software available on line or stored in the server. The TV will have a learning function to record preferred programs, based on previous experience.)
6) **Anytime audio** (radio news, English news and music can be heard at the touch of a key.)

The important thing is to provide functions that enable the TV to respond to information needs regarding news, sports news, weather forecasts and program guides that are often selected throughout the day. It is difficult to standardize from the start services that are linked to individual selection and a matter of personal interests, unless there is an increase in both the number of service items and the amount of expensive usage.

Built-in Self-Editing TV Newspapers

Along with the "anytime" news function, the most important function of TV is to offer fast-breaking important news. It automatically broadcasts round the clock news and weather forecasts and updates them to suit the need of users. It will be possible in the future to give weight to the contents of news and weather forecasts and also the number of items according to users' tastes and circumstances.

These applications make it possible for users to select images and information that they prefer. For example, headlines of general top news (corresponding to the first page of a newspaper), international, politics, economy, sports, society, culture/entertainment, and local matters will all be constantly updated automatically. (The number of categories and items are to be determined by trends in needs.) Of course, further references can be made regarding each item to obtain additional information.

The overall concept obtained from the above discussion is one in which broadcasters transmit stock-type programs for each day all at once, perhaps at a fixed time in the morning, and constantly broadcast at fixed intervals automatically updated news and weather information so that users can watch them at home at the most convenient times through a simple "home interactive" system. By attaching a printer to the TV set, it would also be possible to transmit at any time a TV newspaper the size of a tabloid edition. All these services depend on to what extent personal computers, laser discs, printers and communication functions can be standardized and installed.

5. Evaluation of ISTV

Coinciding with this ISTV technology exhibition, the NHK Broadcasting Science and Technical Research Laboratories conducted a questionnaire survey on people inside and outside NHK, the Laboratories's staff as well as the production staff: producers, directors, cameramen and so on, as well as other researchers. The results of this survey are as follows in **table1** (Number of respondents, 402, June 1996).

"Fantastic, simple and pleasant!" These words are used in advertisements to discribe household electric appliances, and this description should be the essence of multimedia-type TV. An immediate goal of its developers is not far from that of the conventional TV -- to be a medium enjoyed while one is relaxing, or occasionally sitting up straight to watch more closely when a topic is interesting. ISTV should be developed vigorously to suit viewers' interests and tastes physiology, and budget.

Summary

As long as people cannot take in information endlessly and there is a limit to their information gathering behavior in terms of disposable time, money and interest, ISTV will prepare a social foundation for an information-related infrastructure, thanks to its economy, convenience and universal supply of information.

I believe that such evolution for TV will lead to the revitalization of TV in the digital age, as the node of all other electronic media and the first window of contact with information. Other media will develop around

TV.

Thanks to the decision by TV broadcasters to designate "TV with a server" as the standard TV receiver for the digital age, TV will probably continue to play a role as a node for all media and the primary means of access to all sorts of information and entertainment in the 21st century. Television will revive as basic infrastructure for the newly expanded distribution of information.

Thanks and Acknowledgements

I would like to take this opportunity to thank A Yanagimachi, Exective Research Engineer of NHK's Science and Technical Research Laboratories and leader of its special project, the multimedia lab, T Isobe and A Ohya, Senior Research Engineer of the Digital Broadcasting System Rsearch Division , and Researchers K Kai, K Usui and M Ueno, for discussions which contributed to the formation of this author's concept of ISTV as presented in this paper The author joined the special project multimedia lab as an Executive Producer of the Media Development Project

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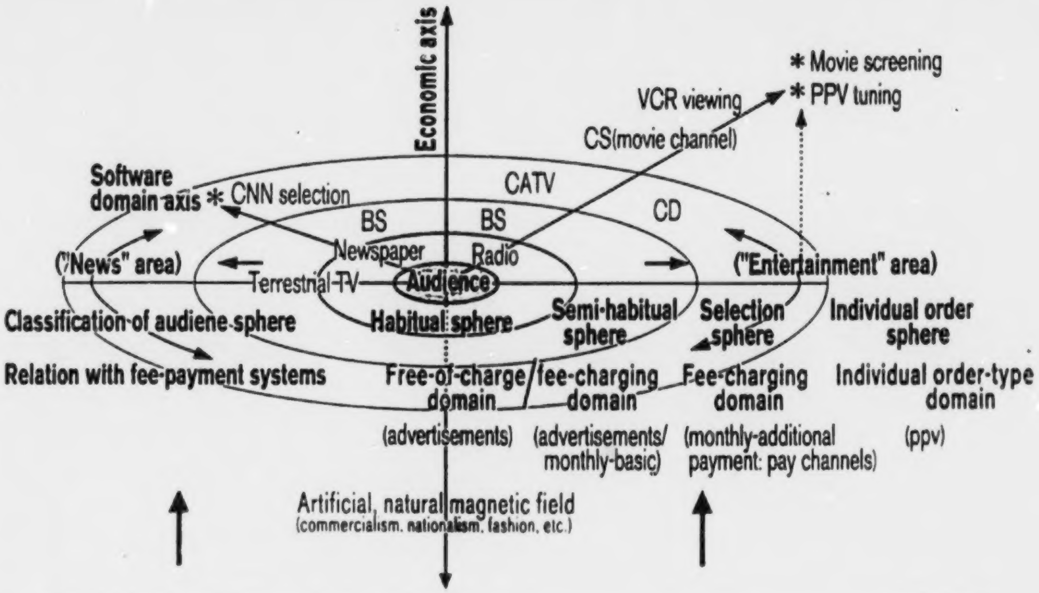

Economic axis
* Movie screening
* PPV tuning
VCR viewing
CS(movie channel)
Software domain axis
* CNN selection
CATV
CD
BS
BS
Newspaper
Radio
("News" area)
Terrestrial-TV
Audience
("Entertainment" area)
Classification of audiene sphere
Habitual sphere
Semi-habitual sphere
Selection sphere
Individual order sphere
Relation with fee-payment systems
Free-of-charge domain
fee-charging domain
Fee-charging domain
Individual order-type domain
(advertisements)
(advertisements/ monthly-basic)
(monthly-additional payment: pay channels)
(ppv)
Artificial, natural magnetic field
(commercialism, nationalism, fashion, etc.)

N.B.
1. The space location is an imagined one.
2. Media that lose out in market competition are omitted from the circle plane.
3. Based on this mental map,the audience behaves "selectively" floating freely in the information space.

Figure 1. Formation of the audience sphere (1995, Nagaya)

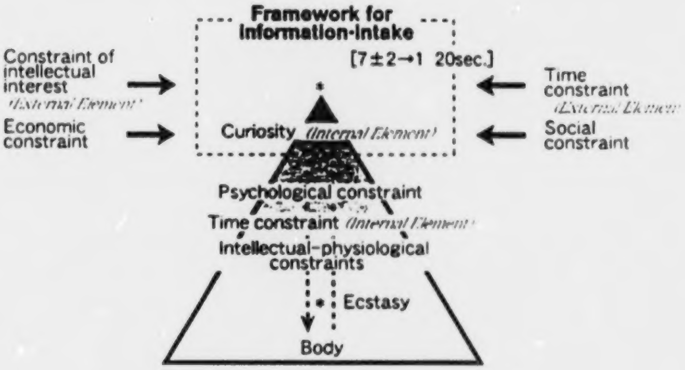

Framework for Information-intake
[7±2→1 20sec.]
Constraint of intellectual interest
(External Element)
Economic constraint
Time constraint
(External Element)
Social constraint
Curiosity (Internal Element)
Psychological constraint
Time constraint (Internal Element)
Intellectual-physiological constraints
Ecstasy
Body

Figure 2. Constraints-programmed macro-model of information selection (1995, Nagaya)

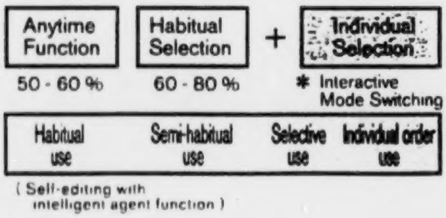

Anytime Function
Habitual Selection
+
Individual Selection
50 - 60 %
60 - 80 %
* Interactive Mode Switching
Habitual use
Semi-habitual use
Selective use
Individual order use
(Self-editing with intelligent agent function)

Figure 3. ISTV:
The Range of Coverage (1996, Nagaya)

Table 1. Survey Results

Respondents support
Built-in Home Server

For	96%
Against	2%
No comment	2%

Evaluation of a menu screen

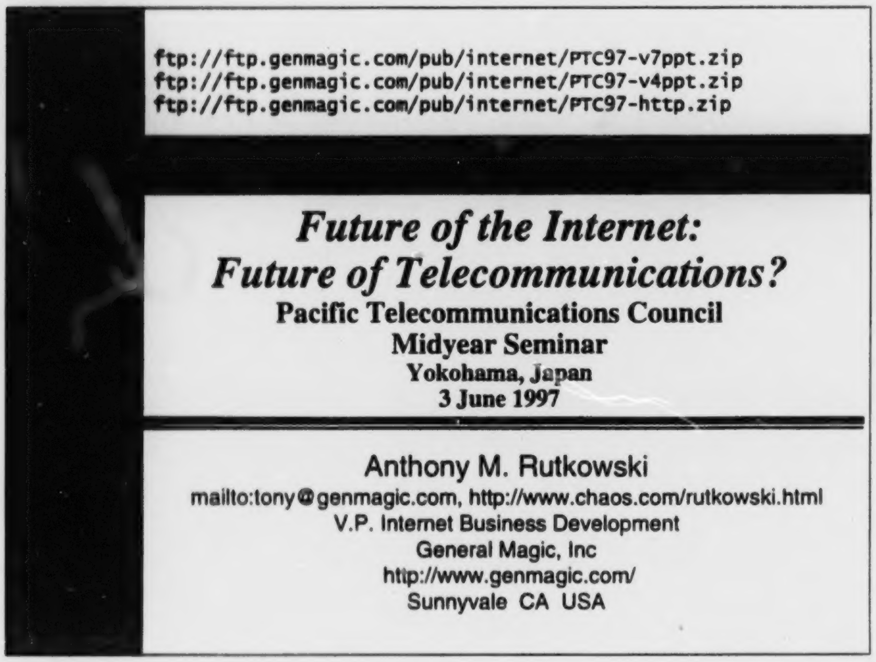
Very convenient	47%
Comparatively convenient	42%
Rather unnecessary	6%
Totally unnecessary	5%

Overall Evaluation of Development Direction

Very good	39%
Generally good	43%
Need to change direction	7%
Don't know	9%

Functional Evaluation of Overall Layout & Services of ISTV

Quite agreeable as a whole	[illegible]
Quite interesting as a whole	10%
Misdirected as a whole	1%
Somehow misplaced	2%
Not interested	1%
Don't know / No comment	1%

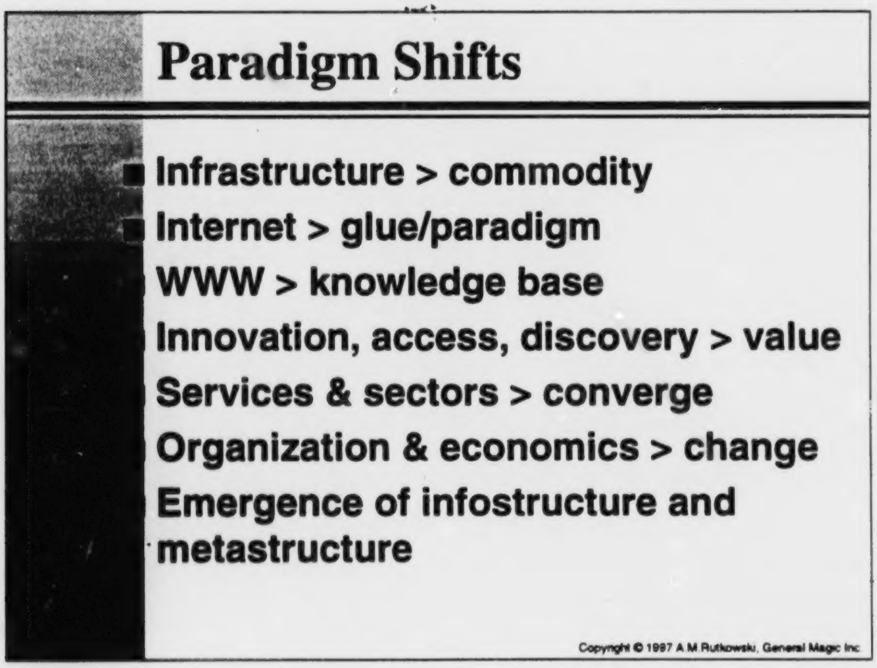


```
ftp://ftp.genmagic.com/pub/internet/PTC97-v7ppt.zip
ftp://ftp.genmagic.com/pub/internet/PTC97-v4ppt.zip
ftp://ftp.genmagic.com/pub/internet/PTC97-http.zip
```

Future of the Internet: Future of Telecommunications?

Pacific Telecommunications Council
Midyear Seminar
Yokohama, Japan
3 June 1997

Anthony M. Rutkowski
mailto:tony@genmagic.com, http://www.chaos.com/rutkowski.html
V.P. Internet Business Development
General Magic, Inc
http://www.genmagic.com/
Sunnyvale CA USA



Paradigm Shifts

- Infrastructure > commodity
- Internet > glue/paradigm
- WWW > knowledge base
- Innovation, access, discovery > value
- Services & sectors > converge
- Organization & economics > change
- Emergence of infostructure and metastructure

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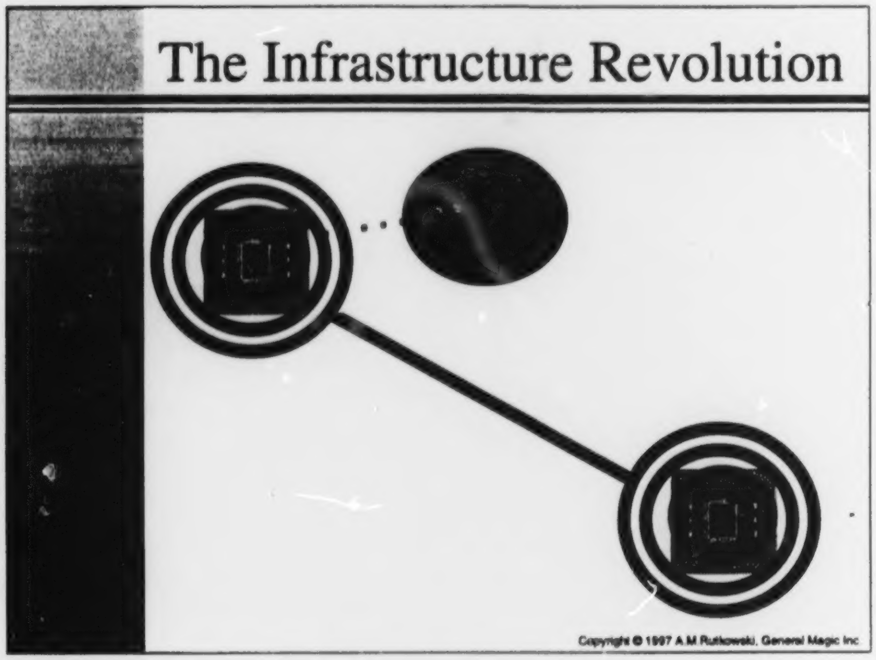

The Infrastructure Revolution

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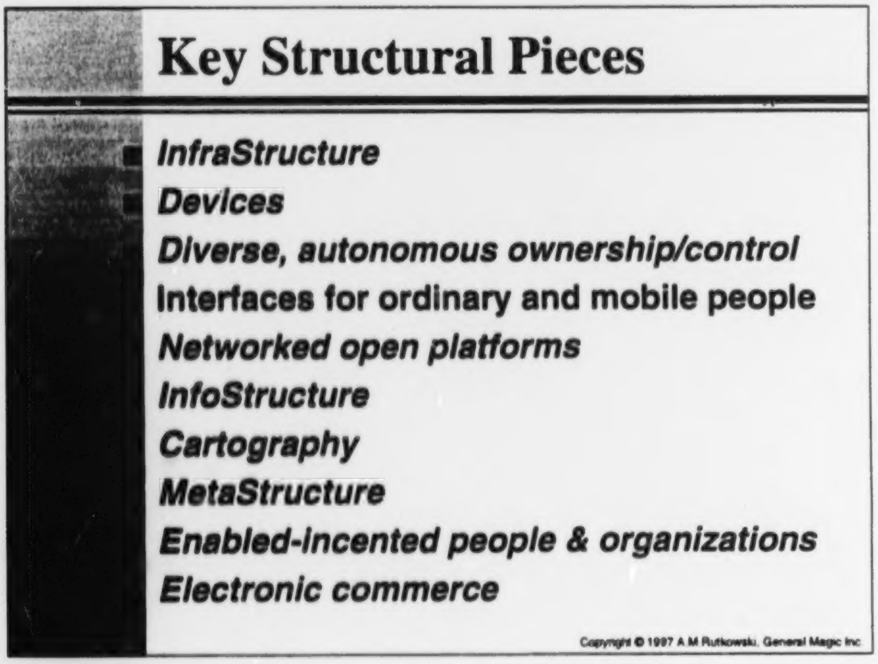

Key Structural Pieces

- *InfraStructure*
- *Devices*
- *Diverse, autonomous ownership/control*
- Interfaces for ordinary and mobile people
- *Networked open platforms*
- *InfoStructure*
- *Cartography*
- *MetaStructure*
- *Enabled-incented people & organizations*
- *Electronic commerce*

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The Infra, Info, Meta Structure Tree

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The Internet Juggernaut

- Intranets, extranets, intrawebs....everywhere
- Internet backbone pipes
- New access pipes
- New access devices, hosts, and architectures
- New platforms and integration tools
- New applications and services
- Middleware: search, profile, push, channeling and agents
- E-commerce support
- New business models and practices
- Public policy, legal, governance issues

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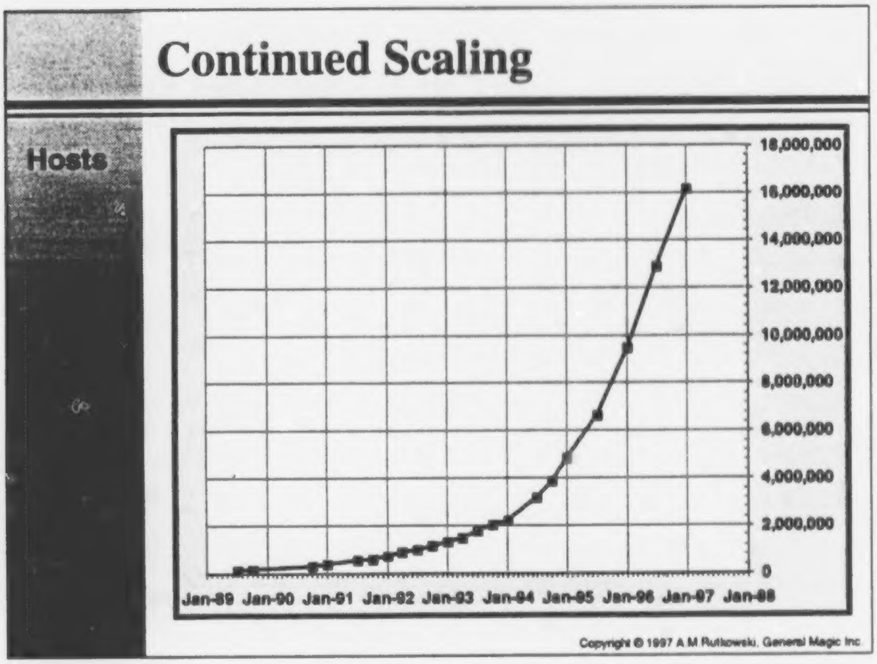

Continued Scaling

Hosts

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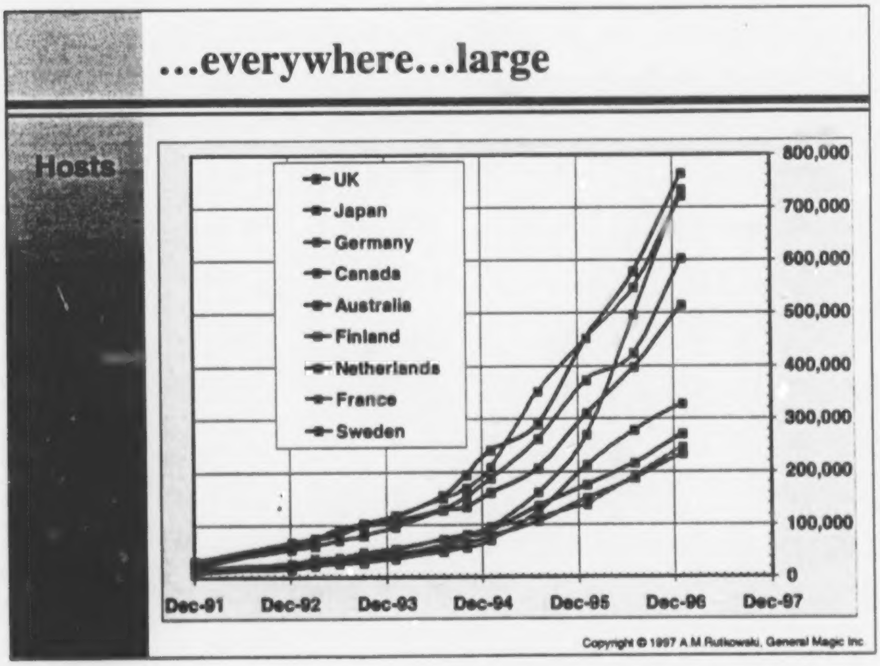

...everywhere...large

Hosts

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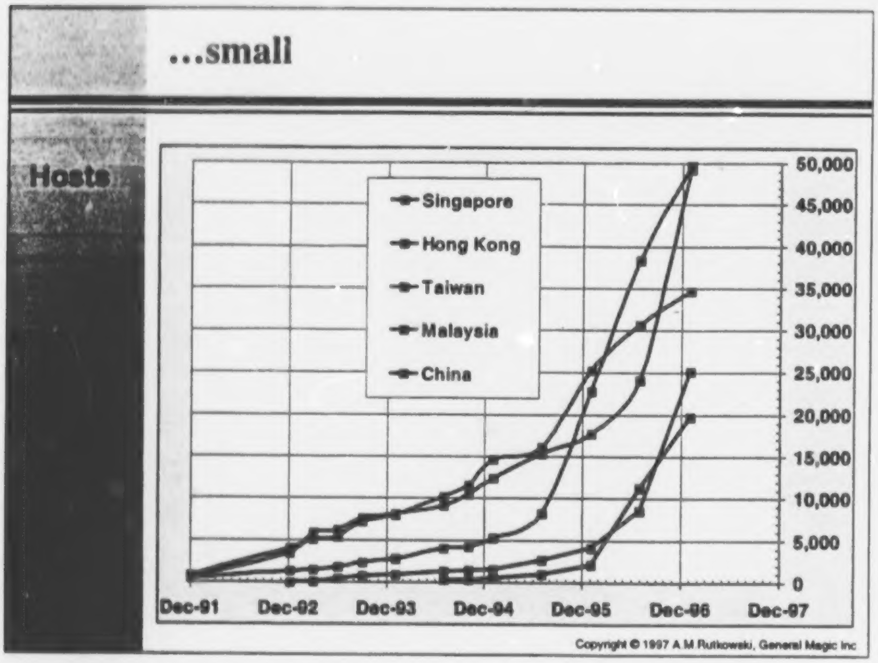

...small

Hosts

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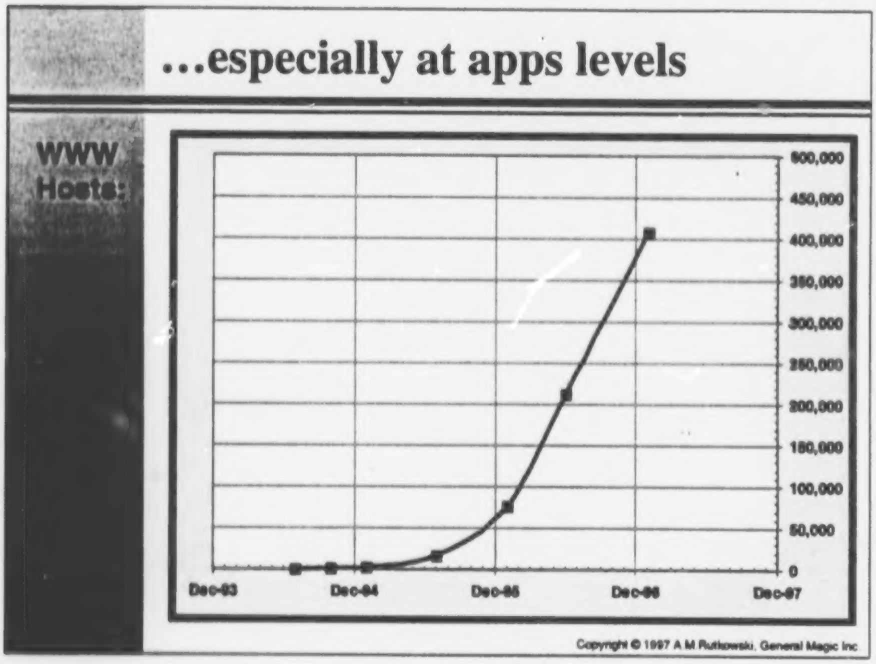

...especially at apps levels

WWW Hosts:

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Intranets, extranets, intrawebs...

- The platforms, products, and tools have become the glue for corporations, institutions, small business, professionals
- SOHO use the biggest emerging low-end market
- Business is where the revenue exists
- Market demand has produced administratively friendly products
- Rewiring is a huge business
- Major synergy with other services for telcos

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Internet backbones

- Scaling is a problem
- QOS increasingly an issue
- National alternative CATV architectures emerging
- Fast IP vs. Tag vs. massively parallel switching competition emerging
- TransPacific Internet bandwidth now exceeds telephony and fax
- Large multilateral exchange facilities exceeding 500 Mbit/s, doubling every six months
- Shift from multilateral to bilateral architectures
- Next millennium LEO-based global systems potentially entering

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NTT's Overseas Business Strategy

June 3, 1997

Noboru MIYAWAKI
Senior Executive Vice President
International Affairs Headquarters
NTT

Topics

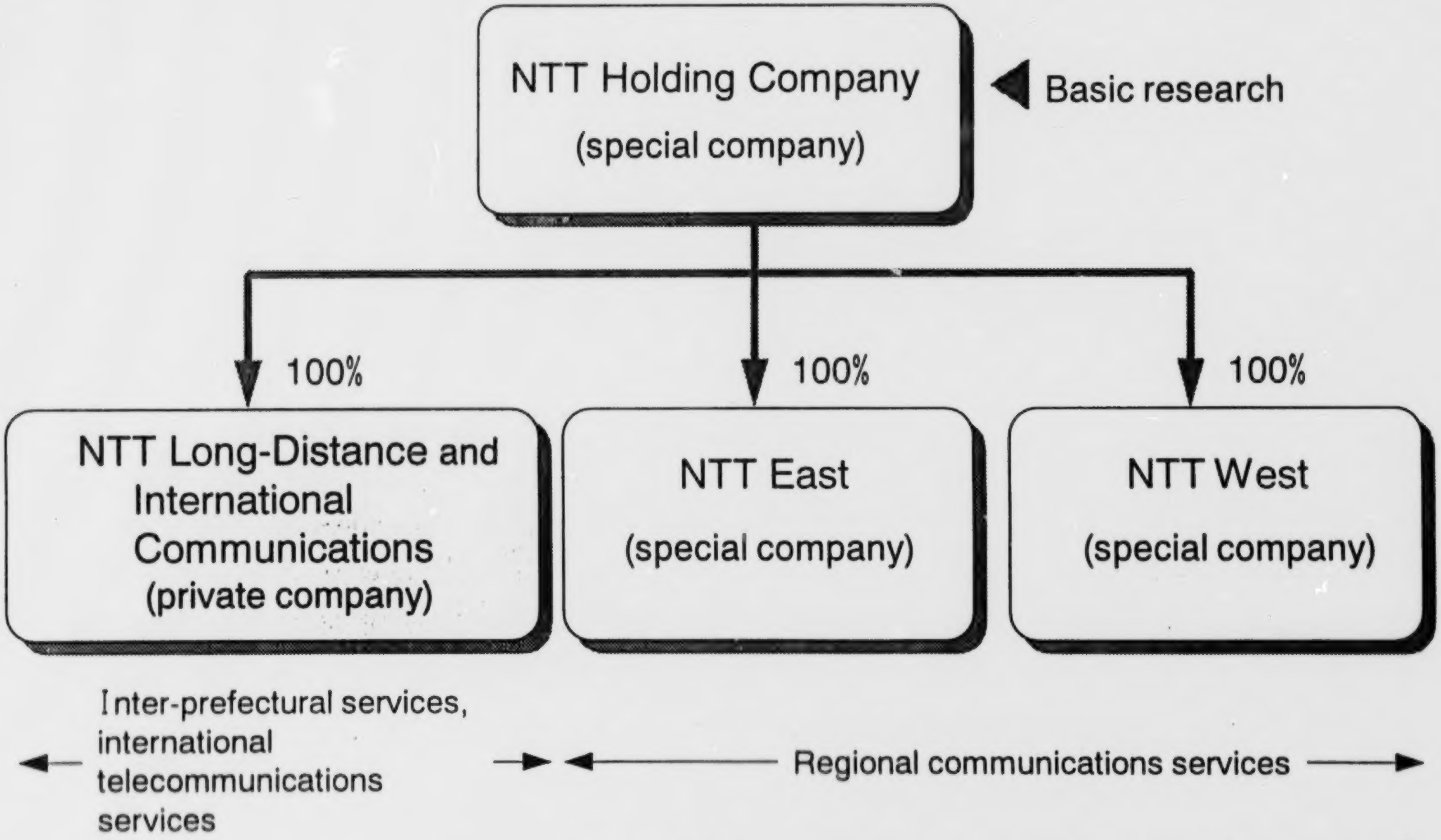
1. Japanese Telecommunications Market Trends

- Reorganization of NTT in 1999 : Overview
- Relationship between Domestic and Global Markets

2. NTT's Overseas Business Strategy

- The Global Telecommunications
- NTT's Vision of Global Business
- Participation in Multimedia Projects in Asia
  - Malaysian Multimedia Super Corridor Project
  - The Asian Multimedia Forum

Reorganization of NTT in 1999



NTT Holding Company
(special company)

Basic research

100%

NTT Long-Distance and International Communications
(private company)

100%

NTT East
(special company)

100%

NTT West
(special company)

Inter-prefectural services, international telecommunications services

Regional communications services

Relationship between Domestic and Global Markets

NTT Law → NTT's entry into international communications business

KDD Law — revise → KDD's entry into domestic communications business

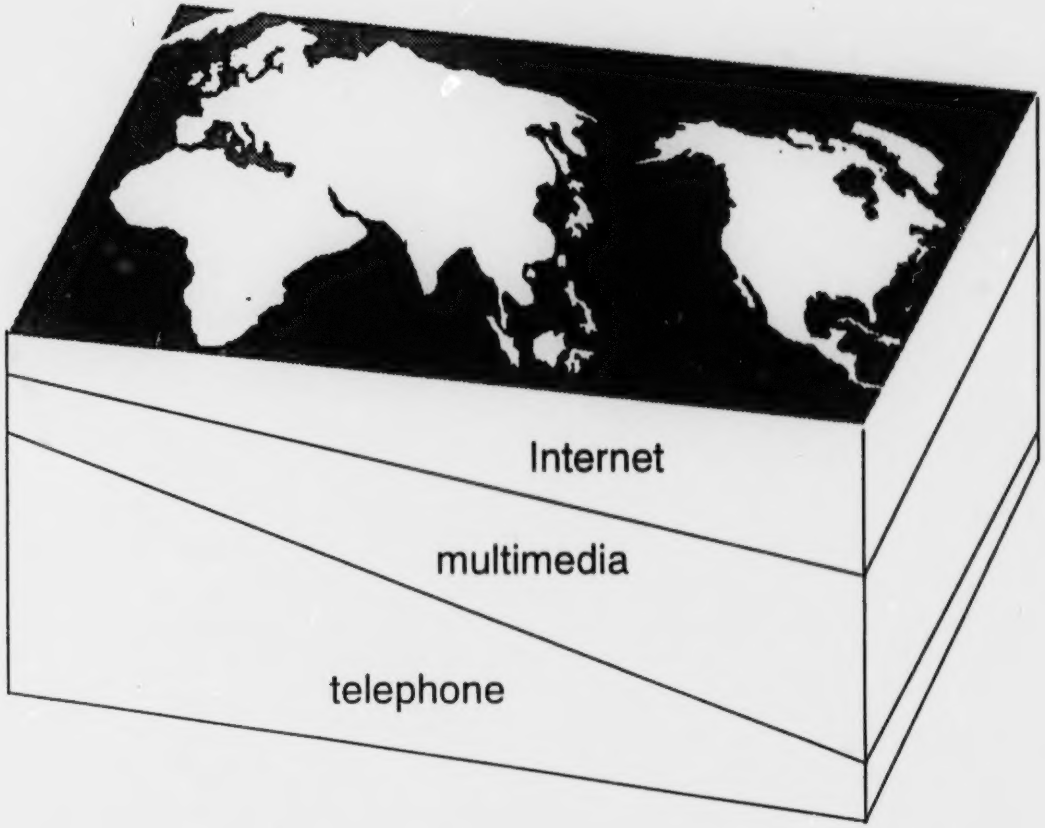
Telecommunications Business Law → Removal of all limitations on foreign ownership in Type I carriers (except for NTT and KDD)

<Summer 1997>

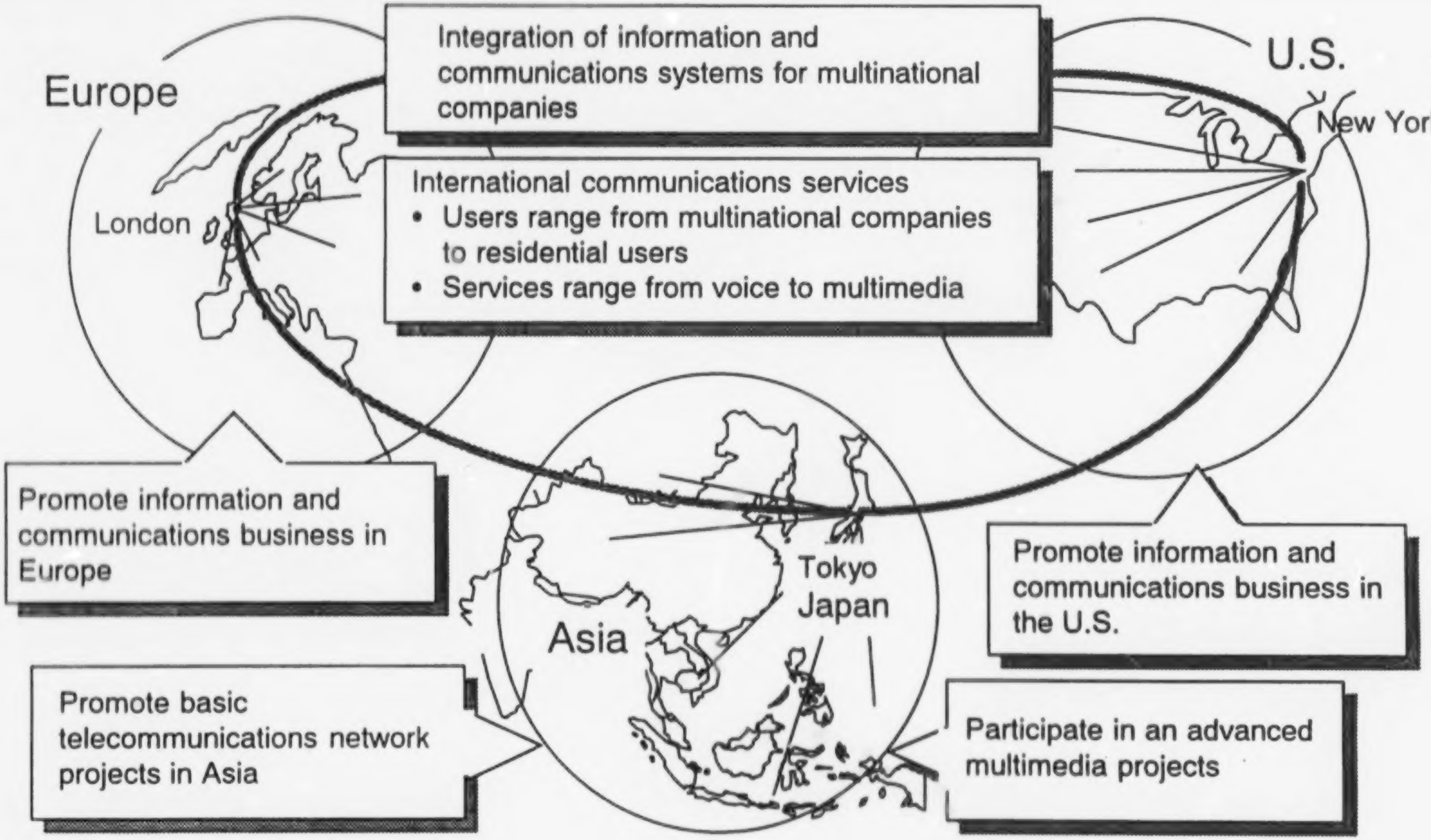
Improve domestic business environment to promote competition

Expected Results :
- Competition and tie-ups between domestic carriers
- Foreign carriers' entry into domestic market, and active alliance formations

The Global Telecommunications


Internet
multimedia
telephone

NTT's Vision of Global Business



Integration of information and communications systems for multinational companies

International communications services
- Users range from multinational companies to residential users
- Services range from voice to multimedia

Promote information and communications business in Europe

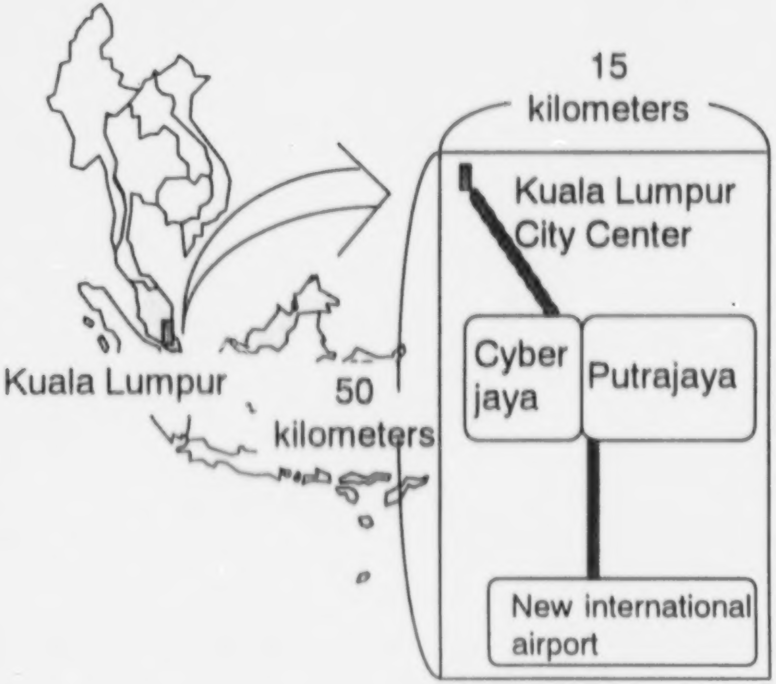
Promote information and communications business in the U.S.

Promote basic telecommunications network projects in Asia

Participate in an advanced multimedia projects

Participation in Multimedia Projects in Asia : MSC

Malaysian Multimedia Super Corridor Project


15
kilometers
Kuala Lumpur City Center
Cyber jaya
Putrajaya
New international airport
Kuala Lumpur
50
kilometers

NTT's Activities

Cooperate with the development of information systems and R&D activities

Contribute to human resources development through Multimedia University and other means

Cooperate with development of Cyberjaya and its infrastructure

Participation in Multimedia Projects in Asia : AMF (Asian Multimedia Forum)

Open Forum

Members

- Principal Members
- General Members
- Users Members
- Advisory Group

Activities

Mutual participation in various multimedia tests

- Promotion & support activities
- Joint R&D
- International test beds

Objectives

Open forum to :

- develop and proliferate multimedia applications & services throughout Asia
- establish a common platform for multimedia communications & services

"KDD's Future strategy, clicking on the Asia-Pacific region"

PTC 1997 Mid year Seminar

June 3, 1997
Tohru OHTA
EXECUTIVE VICE PRESIDENT
K D D

KDD

Paradigm Shift of our Business

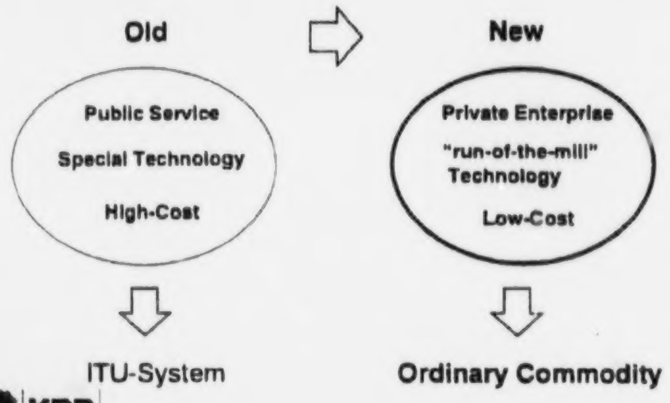
- *Technological Developments*
- *Globalization of Market Needs*
- *Deregulation and Privatization*

⇩

Monopoly → Competition
Half Circuits → End-to-End Services
National Markets → Multi-National Markets
Correspondents → Alliances
Public Utility → Commodity

KDD

Shift of the Industry Structure



Old ⇨ **New**

Public Service
Special Technology
High-Cost

Private Enterprise
"run-of-the-mill" Technology
Low-Cost

ITU-System

Ordinary Commodity

KDD

"Paradigm Shift" is not a new concept anymore

- Digitalization
- Multimedia
- Deregulation within Telecom Market
- from Public Utility to Common Industry

→ Impacts within the Industry

KDD

2

Fundamental change now:
- Revolution -

- Global Multimedia technology
- Digital highway worldwide
- Circuit-switched hierarchical network
  → horizontal distributed network
- Accord of the WTO NGBT

Revolution of whole lifestyle of human community

KDD

Global network society

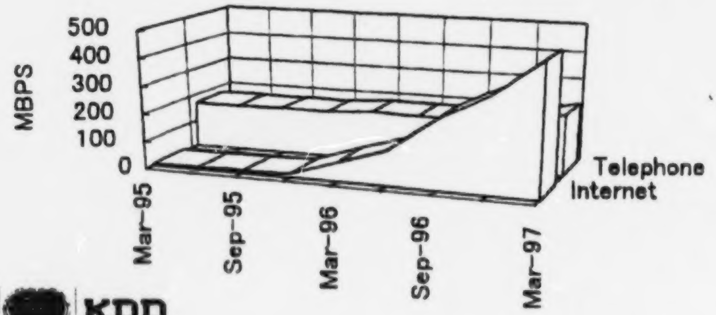
- Internet, Intra-net, and Extra-net
- one world market
- New life style :
  tele-shop, tele-work, tele-medicine, distant education, automatic interpreter etc...

Barriers of time, distance, and language will disappear

KDD

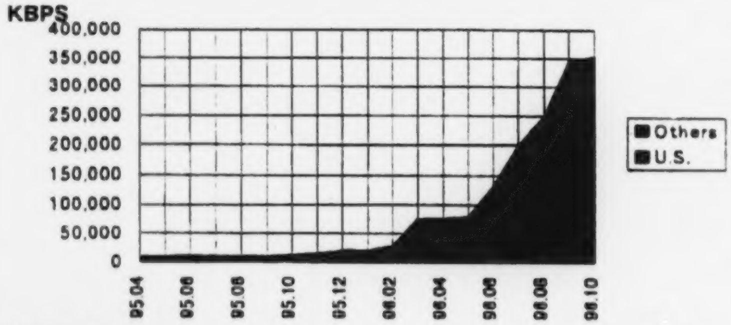
Growth of Internet Circuit Capacity

(Japan / US.)



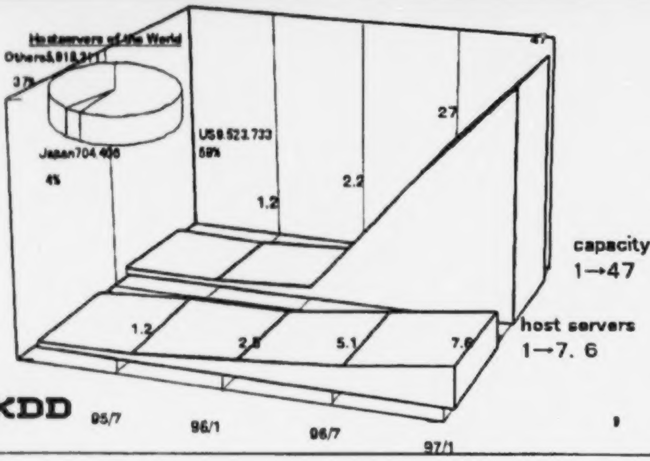
KDD

Internet Circuit Capacity
(From Japan)



KDD

The growth of Internet Capacity and Host Servers between Japan and US （Jan 95= 1 ）



capacity
1→47

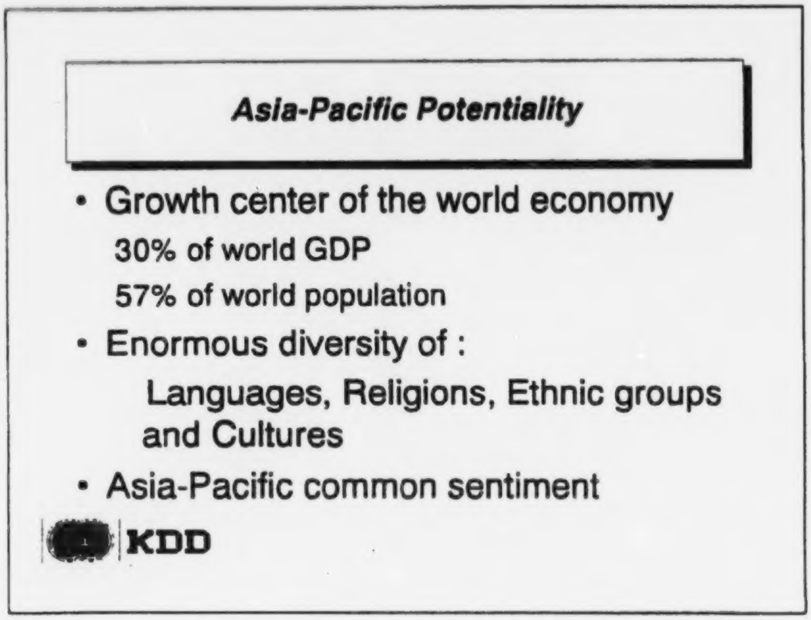
host servers
1→7. 6

KDD

Cooperative approach for global network society

- Infrastructure constructor
- Platform equipment providers
- Contents providers

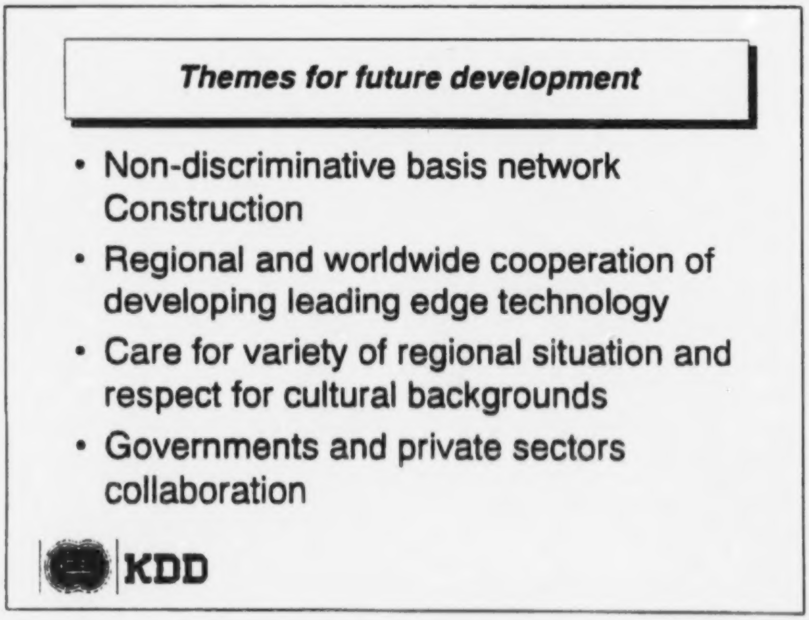
KDD



Asia-Pacific Potentiality

- Growth center of the world economy
  - 30% of world GDP
  - 57% of world population
- Enormous diversity of :
  - Languages, Religions, Ethnic groups and Cultures
- Asia-Pacific common sentiment

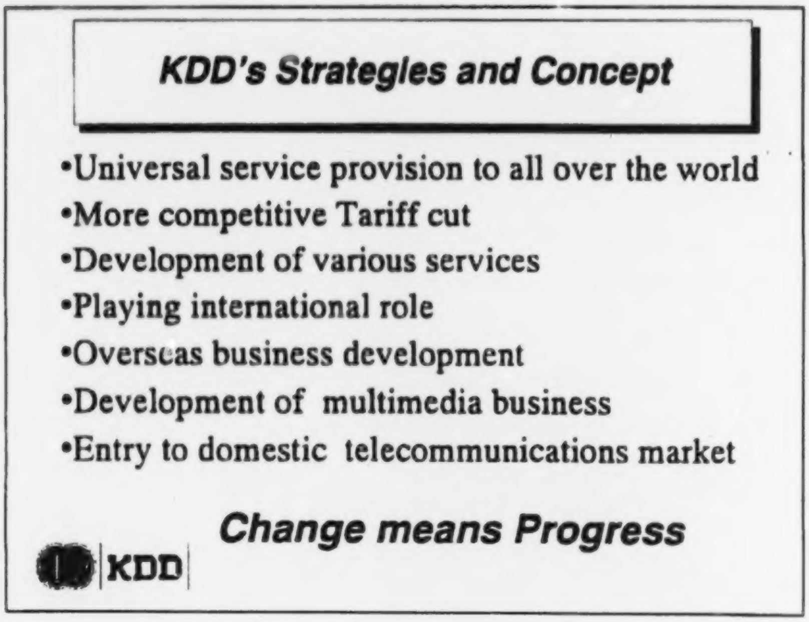
KDD



Themes for future development

- Non-discriminative basis network Construction
- Regional and worldwide cooperation of developing leading edge technology
- Care for variety of regional situation and respect for cultural backgrounds
- Governments and private sectors collaboration

KDD



KDD's Strategies and Concept

- Universal service provision to all over the world
- More competitive Tariff cut
- Development of various services
- Playing international role
- Overseas business development
- Development of multimedia business
- Entry to domestic telecommunications market

Change means Progress

KDD

Wireless Communications in Korea

The New Strategy under Competition and Open-door Policy

June 3, 1997

SK Telecom

Contents

- O Telecommunications History
- O Types of Wireless Communication Services
- O Policy Trends of the MIC
- O Development of Telecom Network
- O Cellular Service
- O Paging Service
- O PCS
- O CT - 2
- O TRS
- O Wireless Data
- O Mobile Satellite Service
- O SK Telecom Overview/Strategy/Vision

34

Brief History of Telecommunications (Cont'd)

1988	Total number of Wireline subscribers exceeded 10 million
1992	Competition introduced in Paging Service Market (11 NCCs)
1994	Second Cellular Service License issued (STI)
1996	CDMA Cellular Service Launched 27 Licenses issued (3 PCS, 6 TRS, 1 International Telecom, 1 Paging, 11 CT-2, 3 Wireless Data, 2 Lease Line)
1997	Wireline subscribers over 20 million New Licenses expected (1 Local, 1 Long Distance, 1 Paging, 4 TRS)

Types of Wireless Communication Services

- Cellular Service
- Paging Service
- Personal Communications Service (PCS)
- CT - 2
- Trunked Radio System (TRS)
- Wireless Data
- Mobile Satellite Service (MSS)
- Future Service
  - GMPCS, WLL, FPLMTS, etc.

35

Policy Trends of the MIC

Expedite Competition

- Open entry & withdrawal for the services which do not require government approval for frequency use
- Adopt frequency allocation policy

Deregulation

- Lift government control on tariff from August 1997
- M&A among telecom service providers allowed

Fair Competition

- Establish fair environment of competition in terms of telecom facilities sharing, interconnection ordinance, accounting separation, prohibition on cross-subsidy

Policy Trends of the MIC (Cont'd)

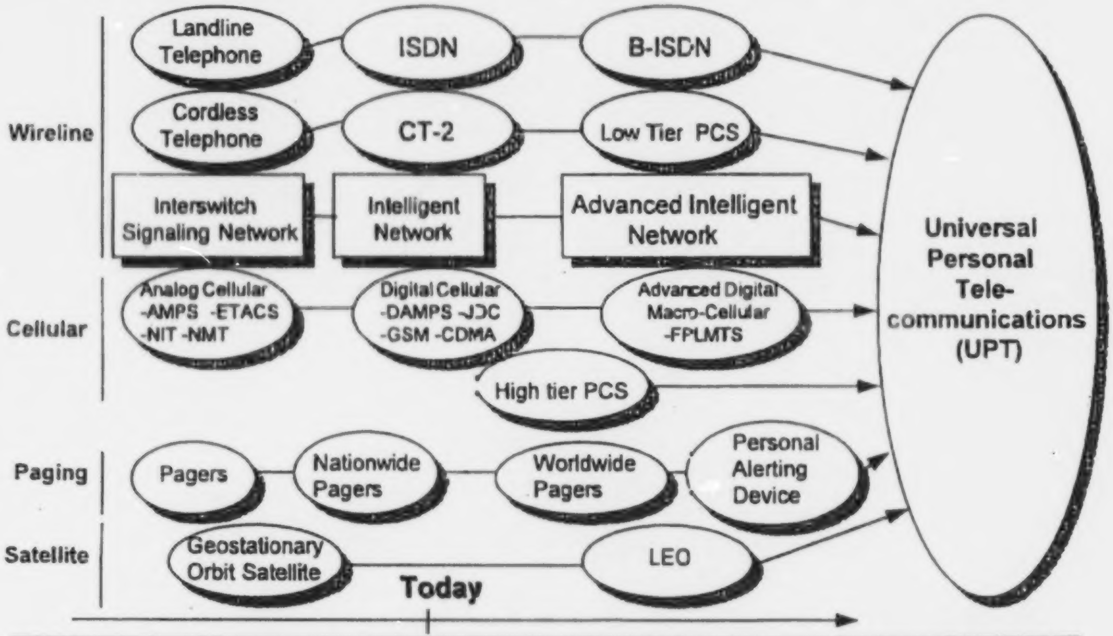
Open Market

- Equal share limit for Koreans and Foreigners from 1998
- Foreign major share holder allowed from 1999

Integration of Telecommunications & Broadcasting

- Set up new rules for multimedia era

Development of Telecom Network



Wireline

Landline Telephone — ISDN — B-ISDN

Cordless Telephone — CT-2 — Low Tier PCS

Interswitch Signaling Network — Intelligent Network — Advanced Intelligent Network

Cellular

Analog Cellular -AMPS -ETACS -NIT -NMT — Digital Cellular -DAMPS -JDC -GSM -CDMA — Advanced Digital Macro-Cellular -FPLMTS

High tier PCS

Paging

Pagers — Nationwide Pagers — Worldwide Pagers — Personal Alerting Device

Satellite

Geostationary Orbit Satellite — LEO

Today

Universal Personal Tele-communications (UPT)

SK *Telecom*

Cellular Service - Market Overview

Subscriber Annual Growth Rate : 98.9% since 1984
- Analog Growth Rate since Digital service: 40.4%

Total number of subscribers

- Appx. 4 million as of May 1997 The 9th largest in the world
- Digital: 1.88 million, Analog: 2.13 million

Digital Transition to be completed by 2005

Future Demand to be changed with market situation
- Introduction of new services : PCS, CT-2, TRS, etc.
- PCS as the most competitive service

SK *Telecom*

Cellular Service - Market Overview (Cont'd)

Geographical difference remarkable
- **Subscribers of Seoul Metropolitan Area: 51.9% of the total**

Tariff expected to decrease sharply due to high Competition and Deregulation

Decreasing tariff: History of SK Telecom Tariff

(unit : won)

	6. '90	2. '96	12. '96
Deposit	650,000	200,000	200,000
Entrance Fee	-	70,000	70,000
Basic Rate	27,000	22,000	21,000
Call Charge	25/10 sec	32/10 sec	28/10 sec

Cellular Service - Competition Status

Duopolistic competition with new digital service from April 1996

As of May 1997

	SK Telecom	Shinsegi Telecom
Service Launch	1984	1996
System	AMPS, CDMA	CDMA only
Number of Subscribers	Analog : 2.13 million Digital : 1.88 million	Digital : 530,000

Cellular Service - Competition Status (Cont'd)

Current Tariff System

(unit : won)

		SK Telecom	Shinsegi Telecom
Activation Fee	Deposit	200,000	200,000
	Entrance Fee	70,000	70,000
Airtime Charge	Economy Plan	Basic Rate 17,500 Call Charge 46/10 sec - Discount time 9/10 sec	-
	Standard Plan	Basic Rate 21,000 Call Charge 28/10 sec	Basic Rate 22,000 Call Charge 24/10 sec - Discount time 24/14 sec - After midnight 8/14 sec
	Premium Plan	Basic Rate 59,000 Call Charge 21/10 sec - Discount time 15/10 sec - Free airtime 270 min	Basic Rate 55,000 Call Charge 19/10 sec - Discount time 19/14 sec - after Midnight 19/42 sec - Free airtime 300 min

Paging Service - Market Overview

1982 Tone Service began with NEC system

1986 Numeric Service began with Motorola system

Subscribers began to increase

- 1982~1996: Annual Growth Rate 67.7%
- May 1997 : 13.5 million
* Number of subscriber-The 3rd in the world
* Penetration rate-The 2nd in the world

Background of high growth

- Active marketing of operators: Teenager's booming
- Consistent decrease of tariff: W12,000/mth ('86), W8,000/mth('95)
- Various Services
  . VMS, Alpha-numeric, Daily information, National Paging, etc.
- Operators' subsidy for sales agents

Paging Service - Market Overview (Cont'd)

Subscriber Growth Rate lowered as market matured

- Growth Rate (Unit: %)

Year	1994	1995	1996
Growth Rate	140.7	51.8	31.8

Advanced Paging & Two-way Paging as new markets

- Advanced paging service introduced this year
  - . Protocol: Motorola's FLEX (6,400 bps)
  - . Number of Subscribers will increase to 200,000
  - . Long Alpha-numeric service will be possible
- Two-way paging service as a new service to break trhough saturated paging market

Paging Service - Competition Status

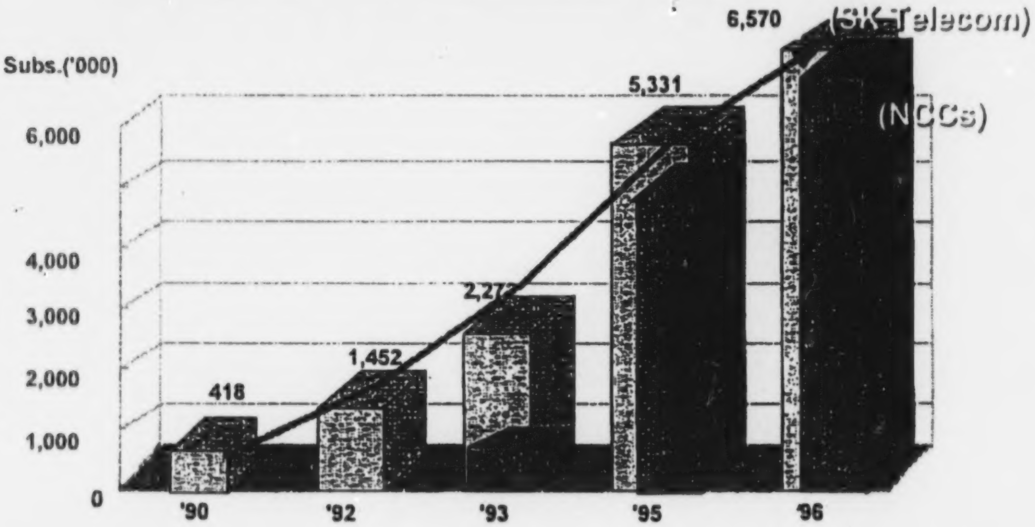
New service providers permitted: 10 NCCs in 1992, 1 NCC in 1996

(As of May 26 '97, unit : 1,000)

		Type of Services	Launch Date	Service Area	Number of Subscribers
National	SK Telecom	Tone, Numeric Alpha-numeric	'82. 12	Nationwide	6,904
Seoul Area	Seoul Mobile Telecom	Numeric Alpha-numeric	'93. 8	Seoul Metropolitan Area	2,221
	Naray Mobile Telecom	Numeric Alpha-numeric	'93. 8		2,108
	Happy Mobile Telecom	Advanced Paging (Numeric, Alpha-)	'97. 5		-
Others	8 NCCs	Numeric Alpha-numeric	'93. 8 ~'93.11	Local Area	2,391

Paging Service - Competition Status (Cont'd)

Annual Demand Trends



SK *Telecom*

Paging Service - Competition Status (Cont'd)

Tariff System

(unit : won)

	Numeric Service					Alpha-numeric Service				
	Basic Rate	Value-added Service		Deposit	Installation Fee	Basic Rate	Value-added Service		Deposit	Installation Fee
		VMS	Wide				VMS	Info service		
SK Telecom	8,000	2,700	2,700	22,000	4,400	14,500	2,700	500	34,000	4,400
Seoul Mobile Telecom	7,900	3,000	2,500	22,000	4,400	14,500	3,000	500	34,000	4,400

PCS

Similar service with cellular at different bandwith (CDMA)
- Cellular : 800MHz
- PCS : 1.8 GHz

3 Licenses issued (1996)
- KT Freetel, Hansol PCS, LG Telecom

Service expect to begin from the 3rd quarter of 1997

Demand forecast

- Different forecasts depending on service area, tariff, service quality
- Not optimistic without remarkable low tariff

SK Telecom

CT - 2 Service

Permitted to KT and paging operators (1996)
- Niche service between cellular and paging market

Commercial service from March 1997
- 3 operators : 100,000 subscriber in Seoul Metropolitan Area

Market prospects

- Successful initial launch
- Gray future : Decreasing subscription rate and rising churning rate
  . Decreasing tariff of cellular service
  . Imminent PCS service
  . Limited service area

SK Telecom

TRS

1993 First analog TRS service : Hankook TRS Co.

1996 6 new licenses issued
- 1 National operator included

1997 4 new licenses being issued

Major customers : Transportation/Warehouse companies, Distribution companies

Market prospects

- 1996's demand : 30,761 (6 times that of 1995)
- Digital TRS expected at the end of 1997
- Market potential only if good service such as ESMR
- Expected demand of 2000 : Approx. 800,000

Wireless Data

1996 3 Licenses issued

1997 Commercial service expected from July 1997

Market prospects

- Bright future on a long-term basis
- Uncertain market on a short-term basis
- Expected subscribers
  . Year 2000 : 100,000
  . Year 2010 : 4,500,000

Mobile Satellite service

INMARSAT service being provided

GMPCS using LEO expected from 1998

4 LEO projects invested by Korean companies

- Iridium : SK Telecom
- Global star : Hyundai, Dacom
- ICO : KT, Samsung, Shinsegi Telecom
- Odyssey : Kumho, Daewoo

Intrim licenses expected to be issued by the MIC this yer

Future Services

Expected new future services : WLL (Wireless Local Loop), FPLMTS, Wireless Multimedia, etc.

WLL expected to be adopted by a new local exchange service operators
- System being developed by ETRI supported by KT & Dacom
- System standard expected to be adopted at TTA in Jun. 1997

FPLMTS (IMT-2000) being strongly supported by the MIC
- Research consortium by 1996, technology development by 2001
- License to be issued only after 1998
  . Technology standardization schedule
  . Technology development trends in Korea

SK Telecom Overview

1984 Founded as Korea Mobile Telecom

1994 Sunkyong Group took controlling stock of KMT

1996 Introduced the first commercial CDMA digital service in the world

1997 SK Telecom as a new name

SK Telecom Overview (Cont'd)

Largest CDMA digital cellular sub. base in the world
- Analog subscriber : 2.13 million, Digital subscriber : 1.35 million
- Market share in Korea : 88%

Seamless cellular and paging coverage nationwide
- Paging subscriber : 6.9 million
- Market share of Korean market : 50.7%

Invested in Iridium Project as a founding investor

SK Telecom - New Strategy

MOVE 21

- Mobile & Multimedia
- Employee Growth & Satisfaction
- Operation without Defects
- Value Creation for Customers

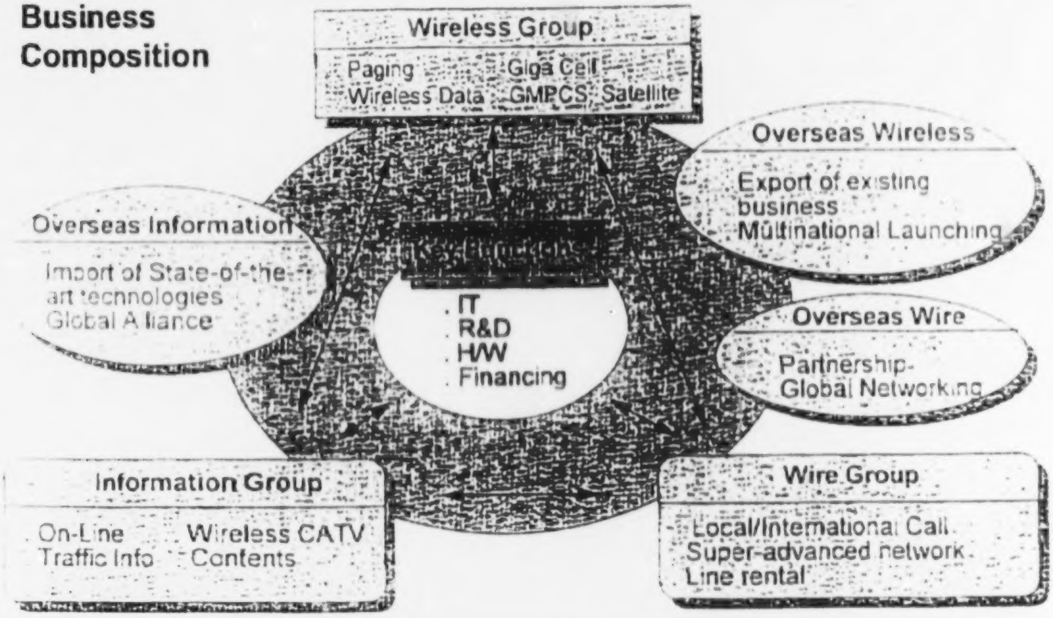
SK Telecom - New Strategy (Cont'd)

- Step I (1997~1999): Foundation Build-up
- Step II (2000~2002): Growth
- Step III (2003~2005): Integration & Development

Wireless	Advanced Paging, GigaCell, Wireless Data, Satellite
Wire	Internet Phone, Phone, Line Equipment Rental, Super Highway Network
Information	Internet/PC Communication, Multimedia On-line, Traffic Information ARS, Wireless CATV, Digital LMDS, VAN, Contents

SK Telecom - Vision for 21 the Century

Business Composition



Wireless Group
- Paging
- Giga Cell
- Wireless Data
- GMPCS, Satellite

Overseas Wireless
- Export of existing business
- Multinational Launching

Overseas Information
- Import of State-of-the-art technologies
- Global Alliance

Key Functions
- IT
- R&D
- H/W
- Financing

Overseas Wire
- Partnership-Global Networking

Information Group
- On-Line
- Wireless CATV
- Traffic Info
- Contents

Wire Group
- Local/International Call
- Super-advanced network
- Line rental

SK Telecom

U.S. User Requirements and Industry Implications

Lee A. Daniels
President
AT&T Japan Ltd.
June 3, 1997

Customer Requirements

- ✦Global Seamless Service
- ✦Bundled Services
- ✦Online Services

Customer Requirements

✦Global Seamless Service

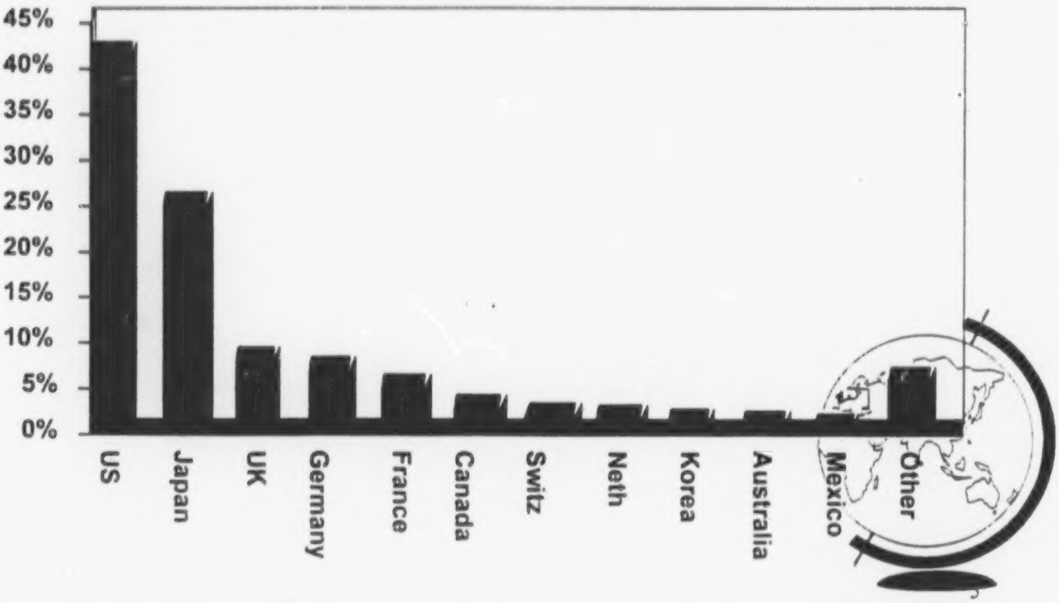
Global Seamless Service - Industry Impact

Multinational Market

- 3752 Multinational Companies
  - Operations in the U.S.
  - Locations in Three Other Countries
  - On Two Different Continents
- $20.8B in Telecommunications Expenditures

Global Seamless Service - Industry Impact

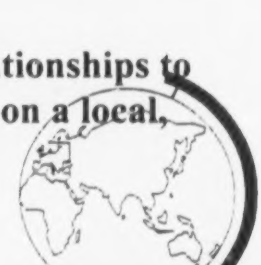
Breakdown Of The "Global 2000" By Location



Global Seamless Service - Industry Impact

Changing Global Environment For Large Multinational Companies

- Businesses searching for new markets and improved manufacturing/distribution locations worldwide
- Competitive pressures forcing major restructuring of large multinational companies (MNCs)
- "Globalization" of MNC operations is increasing need for borderless communications services
- MNCs are increasingly seeking single vendor relationships to manage their complex telecommunications needs on a local, regional, and global basis



Global Seamless Service - Implications For AT&T

AT&T Is One Of The Leading Members Of World Partners Association

- WorldPartners Association was created in response to the needs of multinational companies for global seamless services
- World Partners includes 15 member companies and covers 32 countries
- Customers enjoy a single point of accountability for ordering, provisioning, maintenance, and billing for WorldSource services
- A single global network connects all of the customer's locations whether they are in Sydney, Omaha, Kuala Lumpur, New York or Amsterdam
- World Partners Association is the largest and most highly rated global services alliance in the world

Global Seamless Service - Implications For AT&T

Market Votes AT&T #1

> " A clear leader emerged as the overall Winning Carrier: AT&T swept the board, coming first in nearly all categories... "

Communications Week International Survey
March, 1997

Market Votes WorldPartners #1

> "AT&T WorldPartners appeared the strong leader for alliance services with a healthy 3.9 rating. Ratings for other alliances were far lower; Concert achieved 3.4, Global One 3.2 and Unisource 3.0."

Communications Week International Survey
March , 1997

Customer Requirements

- ✦Global Seamless Service
- ✦Bundled Services

Bundled Services - Industry Impact

Research Reveals Consumers' Preference For Bundling

- Consumers indicate a strong desire for consolidating telecom, entertainment and other services into a single package
- In the U.S., AT&T has the greatest brand strength amongst consumers for communications packages across the top communications and information technology companies.
- Consumers want to bundle services for:
  - Convenience
  - Savings
  - Service Improvement

Source: AT&T Provider Preference Study, 1995 and AT&T Strategic Offer Options Study, Oct 1995; IDC/Link Study 1996

Bundled Services - Industry Impact

Bundling Needs Of Business Customers

- Integrated account management/one point of interface
- One bill
- Discounts across products and services
- One-stop shopping

Bundled Services - Implications For AT&T

AT&T Has Expanded In The Areas Of Wireless, Online, Local and Entertainment, While Strengthening Its Core LD Business

- ✦ Leverage 85 million consumer and small business LD customer base
- ✦ AT&T Wireless has more than 6.5 million customers
- ✦ Launched AT&T Digital PCS to 70 million people in 40 metropolitan markets in the U.S.
- ✦ Filed to offer local service in all 50 states
- ✦ Announced home entertainment packages created by DIRECTV and USSB
- ✦ Launched AT&T WorldNet in 1996
- ✦ Universal Card Services is one of the biggest credit card companies in the U.S. and was rated the top customer service company by J. D. Power and Associates in both 1995 and 1996

Bundled Services - Implications For AT&T

Examples Of AT&T Bundles For Consumers

- ✦ Controlled local services introduction in California for consumers, enabling AT&T to offer end-to-end telephone service
- ✦ Customers purchasing DIRECTV/USSB entertainment system from AT&T receive special rebate if an AT&T Long-Distance customer and special financing if an AT&T UCS cardholder
- ✦ Since October, AT&T has had the technical capability to offer a single bill for long-distance, wireless and online services
  - – In the next year, AT&T will have the capability to add Universal Card Services and toll-free services
- ✦ AT&T customers can earn True Rewards points on wireless and wireline services

Bundled Services - Implications For AT&T

Examples Of AT&T Bundles For Business Customers

- *ATT.ALL* offers customers a single bill combining long-distance, local, wireless, data and Internet services.
- *AT&T Digital Link* initially allows businesses to use private lines connected to AT&T's facilities for outbound local calling
- *AT&T Business Local Service* simplifies pricing by offering a flat rate per minute to call anywhere in the state at anytime
- *AT&T Resources for New Business* offers a single source for information about all aspects of starting a new business
  - Offers consulting, free seminars, discounts from national vendors, a helpful website and the quality and reliability of AT&T long-distance services

Customer Requirements

- Global Seamless Service
- Bundled Services
- Online Services

You Know You Are An Internet Junkie if....

- ✦ You wake up at 3 a.m. to go to the bathroom and stop to check your e-mail on the way back to bed

You Know You Are An Internet Junkie if....

- ✦ You start introducing yourself as "JohnDoe at AOL dot com."

You Know You Are An Internet Junkie if....

- ✦ You name your children Eudora, Mozilla and Dotcom

You Know You Are An Internet Junkie if....

- ✦ You laugh at people with 9600 baud modems

57

You Know You Are An Internet Junkie if....

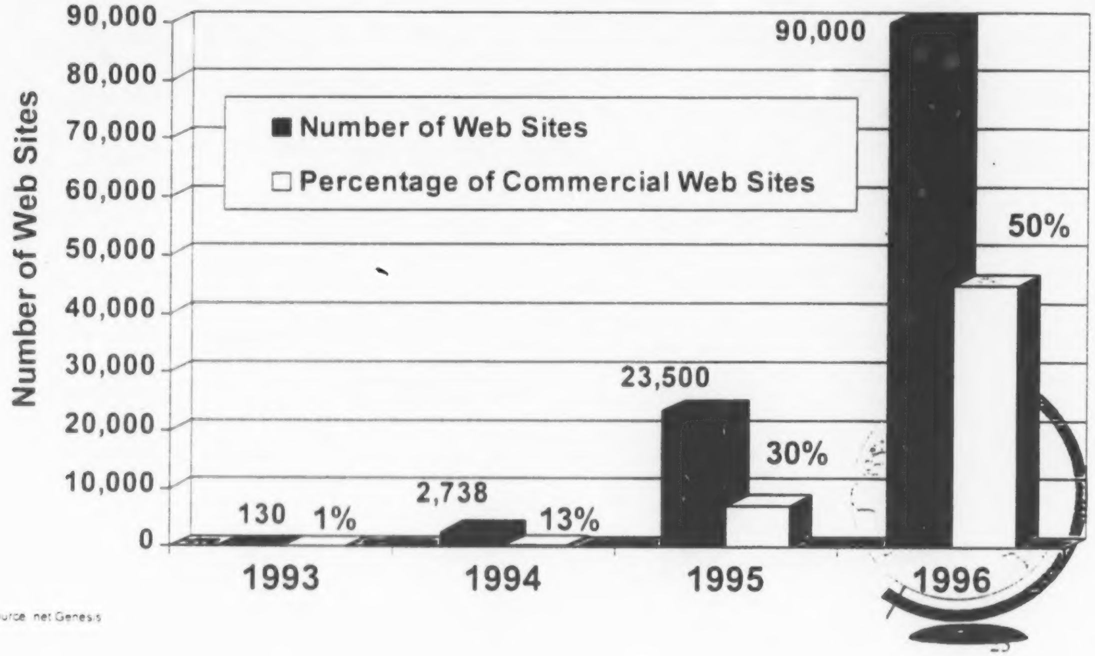
- You check your mail. It says "no messages." So you check it again.

You Know You Are An Internet Junkie if....

- Your cat has its own home page

Online Services - Implications For AT&T

Growth Of The WWW Has Been Dramatic



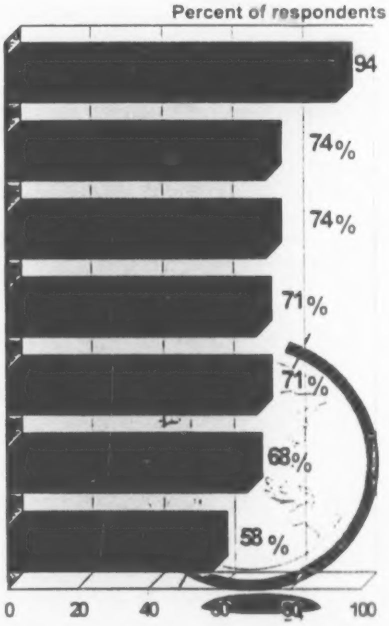
Source: net Genesis

Online Services - Industry Impact

Why Companies Are On The Web Today

■ Companies With Over 100 Employees

- Enhance Public Image
- Distribute Product & Pricing Information
- Improve Customer Service
- Generate Sales Leads
- Communicate with Reps/Suppliers
- Improve intra-company Communications
- Generate Orders



Source: ActivMedia a survey of companies with online presence

Industry Impact - Online Services

Consumer Applications on the Web - Shopping

INFINITE JEST
Wired
TCP/IP

Welcome to Amazon.com Books!

- 1.1 Million Titles Available
- Up to 30% Off List Prices
- Fast World Wide Delivery
- Customer Book Reviews Posting

Industry Impact - Online Services

Consumer Applications on the Web - Online Catalogues

L.L. Bean HomePage - http://www.llbean.com/c.html

L.L.Bean®
Freeport, Maine, USA
Sporting gear and apparel since 1912 for people who love the outdoors
ABOUT L.L. BEAN
WHAT'S NEW
L.L. BEAN PRODUCTS
PARK SEARCH
OUTDOOR SPORTS
L.L.Bean
L.L.Bean

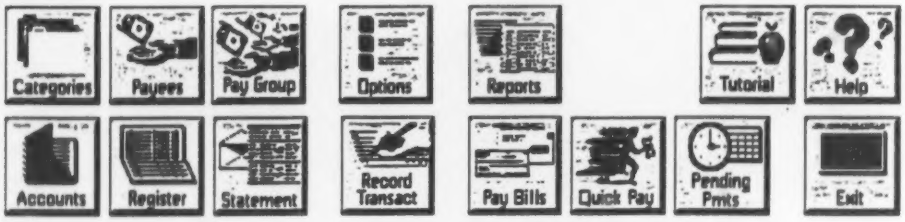
- Online Product Catalog and Ordering Information
- Global Availability
- Content Catering to Target Market

60

Industry Impact - Online Services
Consumer Applications on the Web - Electronic Banking

Security First Network Bank - http://www.sfnb.com/

SFNB


Categories
Payees
Pay Group
Options
Reports
Tutorial
Help
Accounts
Register
Statement
Record Transact
Pay Bills
Quick Pay
Pending Pmts
Exit

- Significant Lower Overhead Costs
- Convenient and Time-Effective for Customer
- Secure Global Reach

Industry Impact - Online Services
Consumer Applications On The Web - Communications

Intel HomePage - www.intel.com

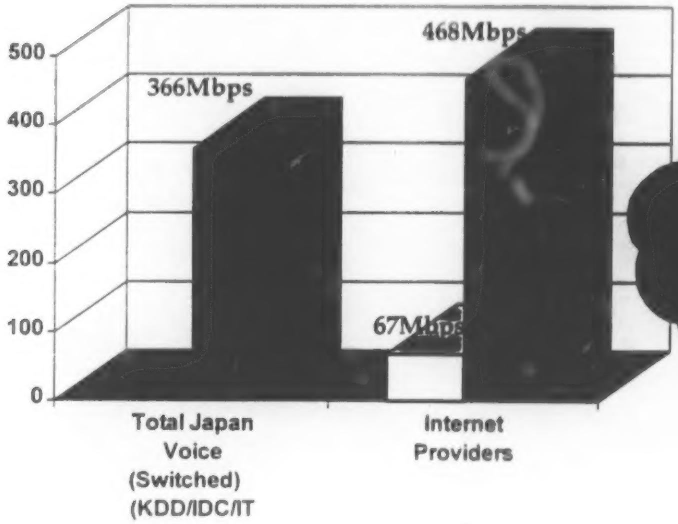
intel
contents search feedback support language
a world of info for
home computing
business computing
intel and the internet
corporate news & info
custom news for you
developers
channel
see a showcase of
internet technology firsts
cool pc software
news updates

- In 1996, e-mail messages exceeded postal mail - 95 billion versus 85 billion
- Over 60 million e-mail users at end of 1996
- About 30,000 People Make Internet Calls Today
- Some 30 Million Browsers Equipped for Using Internet Phone

Online Services - Industry Impact

The Internet Access Market Is Growing Explosively And Has Become A Major Source Of Leased Line Demand

US/Japan Circuits in Service

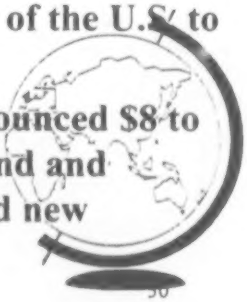


Source: Asahi Newspaper, Feb. 3, 1997

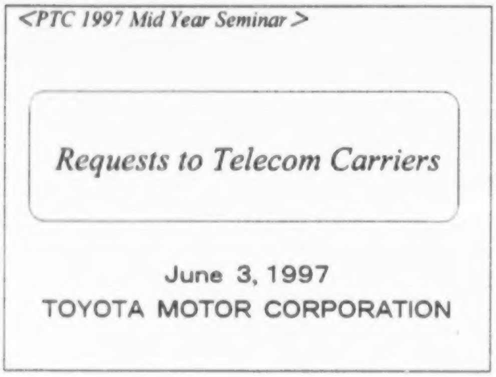
Online Services - Implications For AT&T

AT&T Launched The AT&T WorldNet Service In 1996

- Signed up more than 800,000 customers to AT&T's WorldNet offer for Internet access
- AT&T WorldNet Service is the #1 Internet access provider
- 93.5% of WorldNet customers successfully dial into the service on their first try, compared with average industry rate of 86.8%
- AT&T Easy-Commerce Service makes electronic commerce as easy as calling a toll-free number
- AT&T Jens in Japan was the first country outside of the U.S. to launch WorldNet
- AT&T plans to invest a substantial part of its announced $8 to $9 billion in capital expenditures this year to expand and upgrade its network and to introduce sophisticated new services.



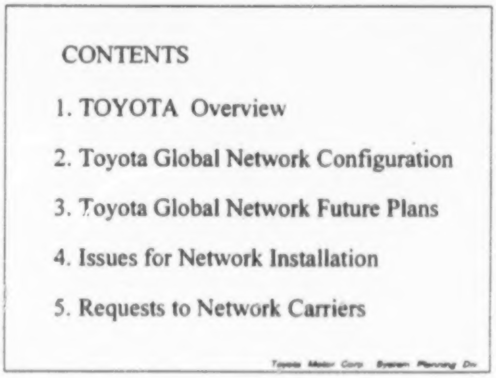
62



<PTC 1997 Mid Year Seminar>

Requests to Telecom Carriers

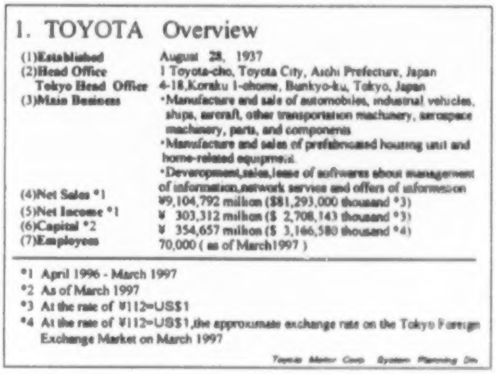
June 3, 1997
TOYOTA MOTOR CORPORATION



CONTENTS

1. TOYOTA Overview
2. Toyota Global Network Configuration
3. Toyota Global Network Future Plans
4. Issues for Network Installation
5. Requests to Network Carriers

Toyota Motor Corp. System Planning Div.



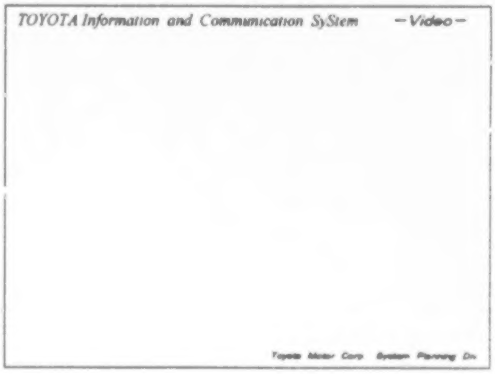
1. TOYOTA Overview

(1)Established	August 28, 1937
(2)Head Office	1 Toyota-cho, Toyota City, Aichi Prefecture, Japan
Tokyo Head Office	4-18,Koraku 1-chome, Bunkyo-ku, Tokyo, Japan
(3)Main Business	・Manufacture and sale of automobiles, industrial vehicles, ships, aircraft, other transportation machinery, aerospace machinery, parts, and components ・Manufacture and sales of prefabricated housing unit and home-related equipment ・Development,sales,lease of softwares about management of information,network service and offers of information
(4)Net Sales *1	¥9,104,792 million ($81,293,000 thousand *3)
(5)Net Income *1	¥ 303,312 million ($ 2,708,143 thousand *3)
(6)Capital *2	¥ 354,657 million ($ 3,166,580 thousand *4)
(7)Employees	70,000 (as of March1997)

---

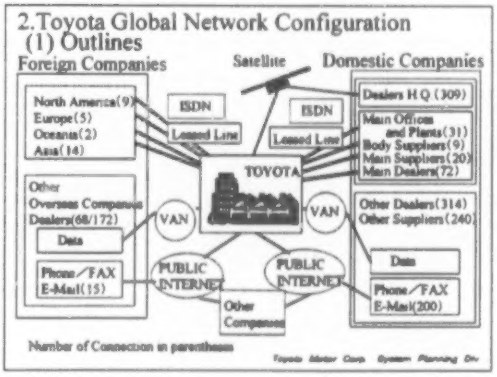
*1 April 1996 - March 1997
*2 As of March 1997
*3 At the rate of ¥112=US$1
*4 At the rate of ¥112=US$1,the approximate exchange rate on the Tokyo Foreign Exchange Market on March 1997

Toyota Motor Corp. System Planning Div.



TOYOTA Information and Communication SyStem －*Video*－

Toyota Motor Corp. System Planning Div.



2.Toyota Global Network Configuration
(1) Outlines

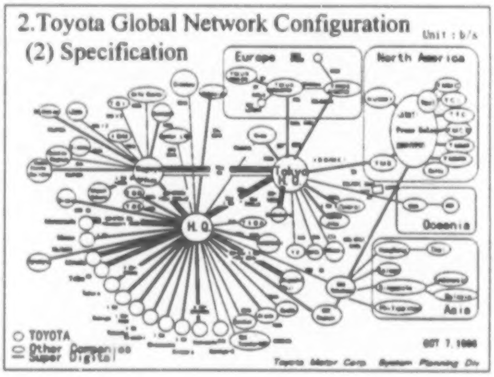
Foreign Companies
North America(9)
Europe(5)
Oceania(2)
Asia(14)
Other Overseas Companies Dealers(68/172)
Data
Phone／FAX E-Mail(15)

Satellite
ISDN
Leased Line
ISDN
Leased Line
TOYOTA
VAN
VAN
PUBLIC INTERNET
PUBLIC INTERNET
Other Companies

Domestic Companies
Dealers H.Q (309)
Main Offices and Plants(31)
Body Suppliers(9)
Main Suppliers(20)
Main Dealers(72)
Other Dealers(314)
Other Suppliers(240)
Data
Phone／FAX E-Mail(200)

Number of Connection in parentheses

Toyota Motor Corp. System Planning Div.



2.Toyota Global Network Configuration
(2) Specification

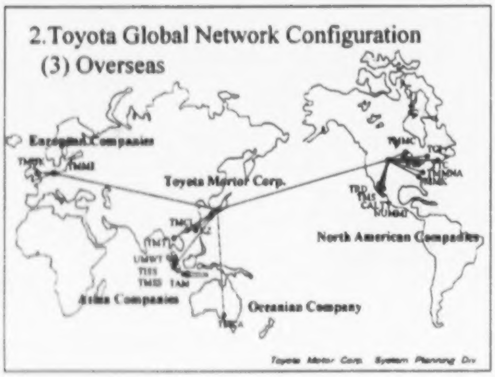
Unit : b/s

Toyota Motor Corp. System Planning Div.

BEST COPY AVAILABLE

1

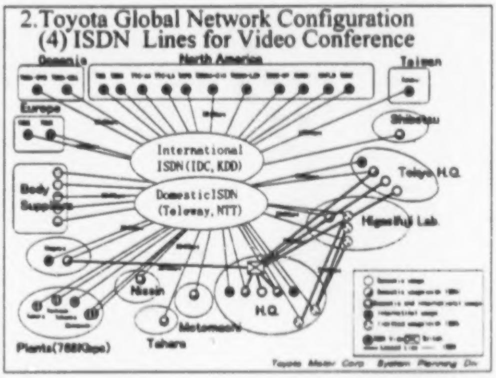
63



2.Toyota Global Network Configuration
(3) Overseas

European Companies
TMUK
TMMI
Toyota Motor Corp.
TMMC
TCI
TMMA
TRD
TMS
CALTY
NUMMI
North American Companies
TMT
TMT
UMWT
TISS
TMSS
TAM
Asian Companies
Oceanian Company
TMCA

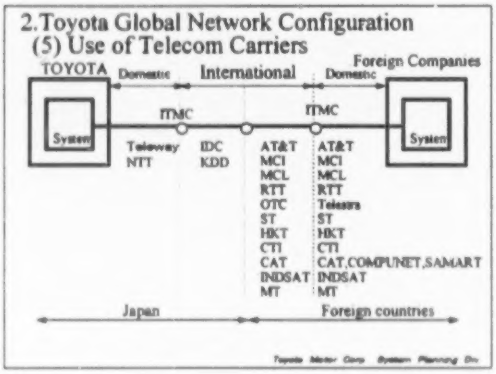
Toyota Motor Corp. System Planning Div



2.Toyota Global Network Configuration
(4) ISDN Lines for Video Conference

Oceania
North America
Taiwan
Europe
Shibetsu
International ISDN (IDC, KDD)
Domestic ISDN (Teleway, NTT)
Tokyo H.Q.
Body Suppliers
Higashifuji Lab.
Nissin
H.Q.
Motomachi
Tahara
Plants(768Kbps)

Toyota Motor Corp. System Planning Div



2.Toyota Global Network Configuration
(5) Use of Telecom Carriers

TOYOTA
Foreign Companies
Domestic
International
Domestic
ITMC
ITMC
System
System

Teleway
NTT

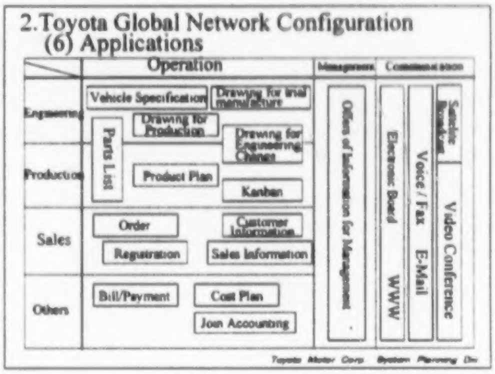
IDC
KDD

AT&T
MCI
MCL
RTT
OTC
ST
HKT
CTI
CAT
INDSAT
MT

AT&T
MCI
MCL
RTT
Telestra
ST
HKT
CTI
CAT,COMPUNET,SAMART
INDSAT
MT

Japan
Foreign countries

Toyota Motor Corp. System Planning Div



2.Toyota Global Network Configuration
(6) Applications

Operation
Management
Communication

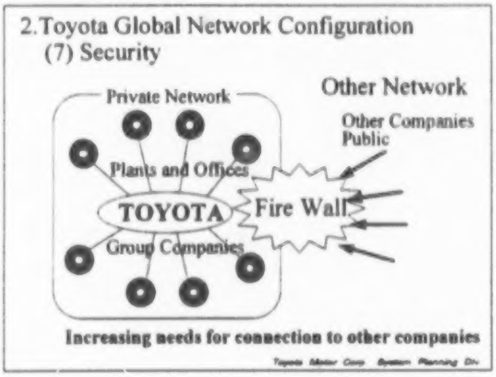
Engineering
Production
Sales
Others

Vehicle Specification
Drawing for trial manufacture
Drawing for Production
Parts List
Drawing for Engineering Changes
Product Plan
Kanban
Order
Customer Information
Registration
Sales Information
Bill/Payment
Cost Plan
Join Accounting

Offers of Information for Management

Electronic Board
WWW
Voice / Fax
E-Mail
Satellite Broadcast
Video Conference

Toyota Motor Corp. System Planning Div

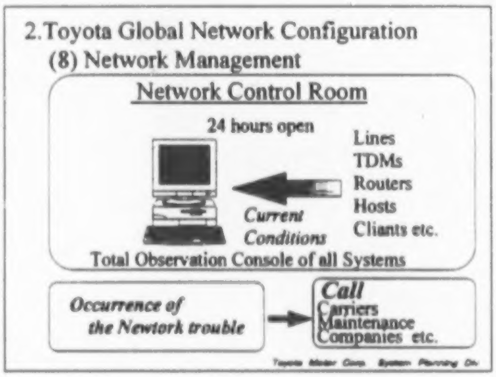


2.Toyota Global Network Configuration
(7) Security

Private Network
Plants and Offices
TOYOTA
Group Companies
Fire Wall
Other Network
Other Companies
Public

Increasing needs for connection to other companies

Toyota Motor Corp. System Planning Div



2.Toyota Global Network Configuration
(8) Network Management

Network Control Room
24 hours open
Lines
TDMs
Routers
Hosts
Cliants etc.
Current Conditions
Total Observation Console of all Systems

Occurrence of the Newtork trouble

Call
Carriers
Maintenance
Companies etc.

Toyota Motor Corp. System Planning Div

3. Toyota Global Network Future Plans
(1) Performance of the Network

Current : Existing Network is Adequate the Limited Area

Future Growth : Requires Upgrade on a World-Wide Bases

- Difference in time, World Wide Routing etc.

3. Toyota Global Network Future Plans
(2) Flexibility of the Network

Current : Advanced Network at the time of Installation

- Hard to adopt Newest Technologies

Future Growth : Flexible Network to Incorporate Newest Technologies

3. Toyota Global Network Future Plans
(3) Objectives of the Network

Current : Cost Saving Network

Future Growth : Strategic Network for the Company for the 21st Century

- Close relation with the plan of sales and production

3. Toyota Global Network Future Plans

Expansion of Global Toyota Network Plans

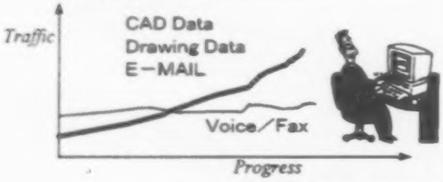
Middle and Near East
Latin America
Africa etc.

4. Issues for Network Installation
(1) Ability of Network

Needs for Wide Bandwidth and High Speed Network

Rapid Increase of Data Traffic on IP Network

→ Frequent Change of Bandwidth



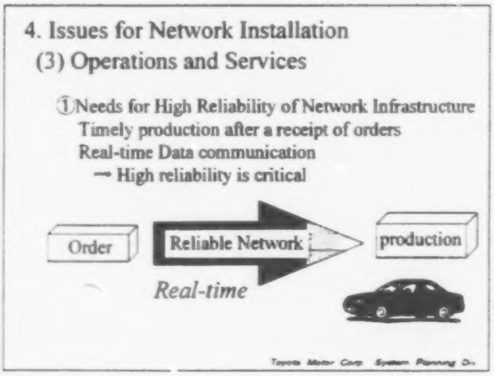
4. Issues for Network Installation
(2) Installation Lead-time, Standardization

①Reduction of Network Installation Lead-time

Needs for new network as an Infrastructure according to the company's business plan

②Needs of Standardized Communication Infrastructure

Global communication as worldwide supply system



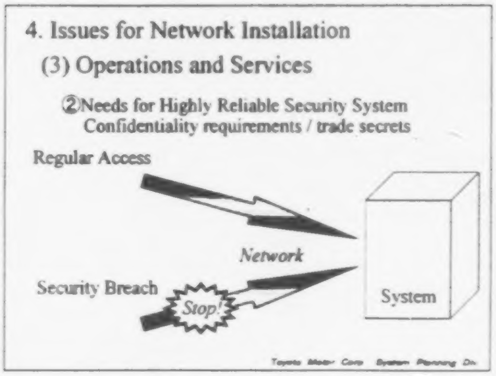
4. Issues for Network Installation

(3) Operations and Services

①Needs for High Reliability of Network Infrastructure
Timely production after a receipt of orders
Real-time Data communication
→ High reliability is critical

Order
Reliable Network
production
Real-time

Toyota Motor Corp. System Planning Div.



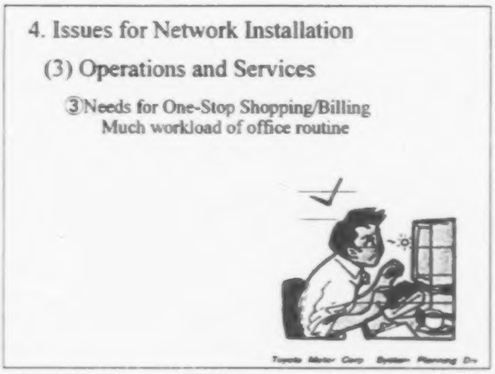
4. Issues for Network Installation

(3) Operations and Services

②Needs for Highly Reliable Security System
Confidentiality requirements / trade secrets

Regular Access
Network
Security Breach
Stop!
System

Toyota Motor Corp. System Planning Div.

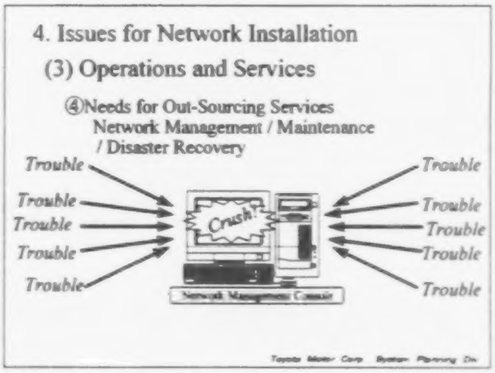


4. Issues for Network Installation

(3) Operations and Services

③Needs for One-Stop Shopping/Billing
Much workload of office routine

Toyota Motor Corp. System Planning Div.



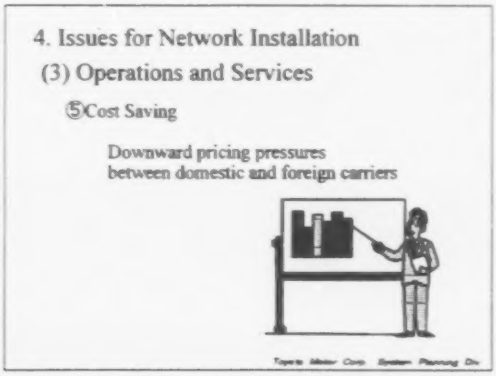
4. Issues for Network Installation

(3) Operations and Services

④Needs for Out-Sourcing Services
Network Management / Maintenance
/ Disaster Recovery

Trouble
Trouble
Trouble
Trouble
Trouble
Crush!?
Network Management Console
Trouble
Trouble
Trouble
Trouble
Trouble

Toyota Motor Corp. System Planning Div.



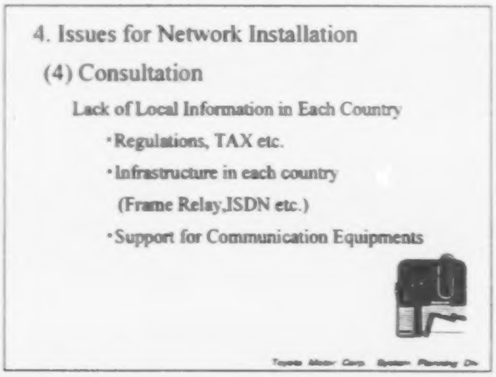
4. Issues for Network Installation

(3) Operations and Services

⑤Cost Saving

Downward pricing pressures
between domestic and foreign carriers

Toyota Motor Corp. System Planning Div.



4. Issues for Network Installation

(4) Consultation

Lack of Local Information in Each Country
- Regulations, TAX etc.
- Infrastructure in each country
  (Frame Relay,ISDN etc.)
- Support for Communication Equipments

Toyota Motor Corp. System Planning Div.

5. Requests to Telecom Carriers

(1) Flexible Services of Network

Easy Expansion of Bandwidth

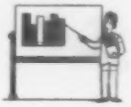
- Short Time Migration
- Simple Procedure
- Specification of Migration Term

5. Requests to Telecom Carriers

(2) Cost Saving

Lowest Possible Service Price to be Competitive

(3) Improvement Carrier's Consultation Services



5. Requests to Telecom Carriers

(4) Improvement of Reliability of Network

①Quality
②Quick Response
③Network Management

(5) Simplify Procedures and Accounting

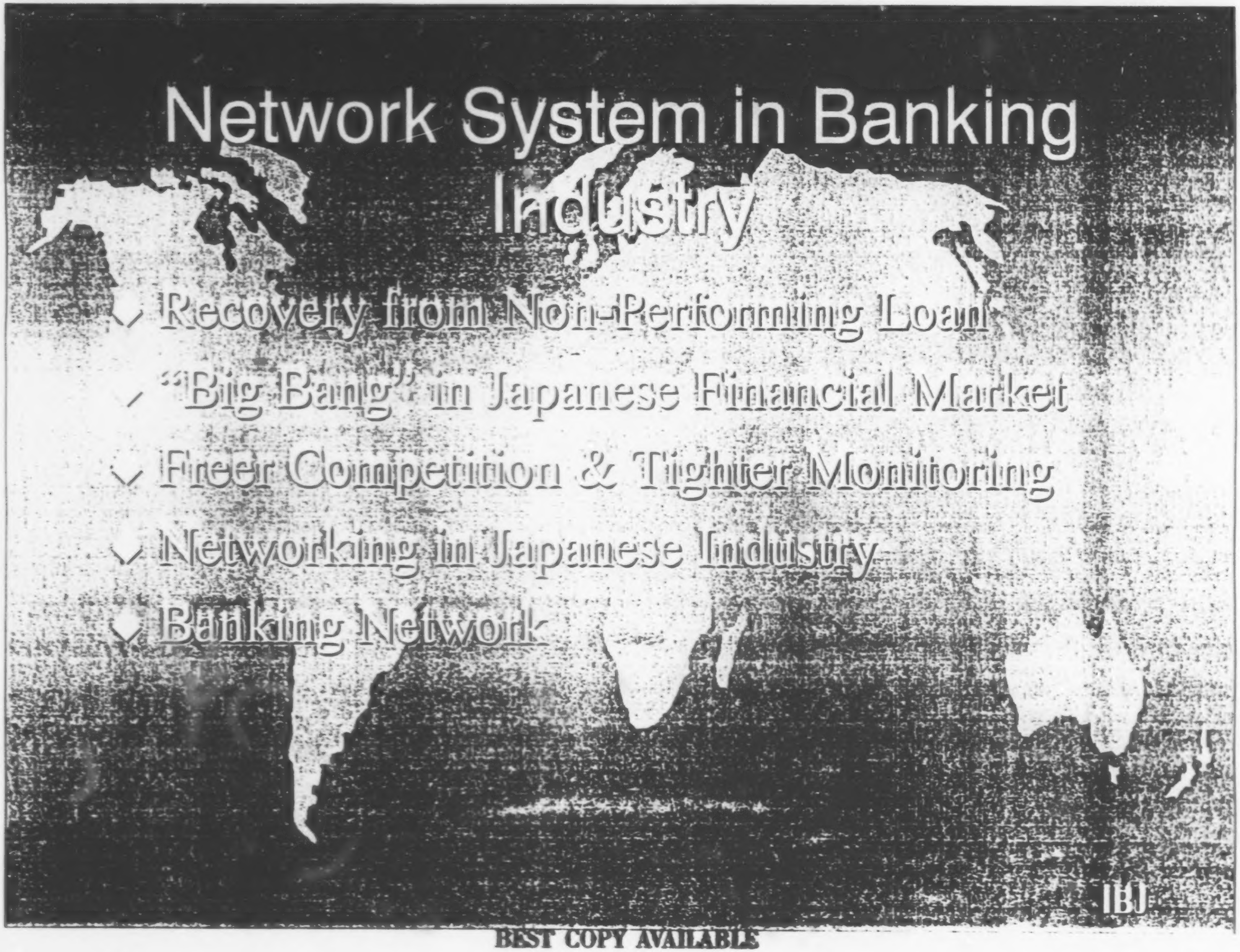
Adoption of One-Stop Billing/Shopping Service

(6) Efforts to Lift Restrictions

①Request to the Government
②Public Line - Leased Line - Public Line Connection to Any Countries

TELECOM CARRIERS

TOYOTA MOTOR CORPORATION



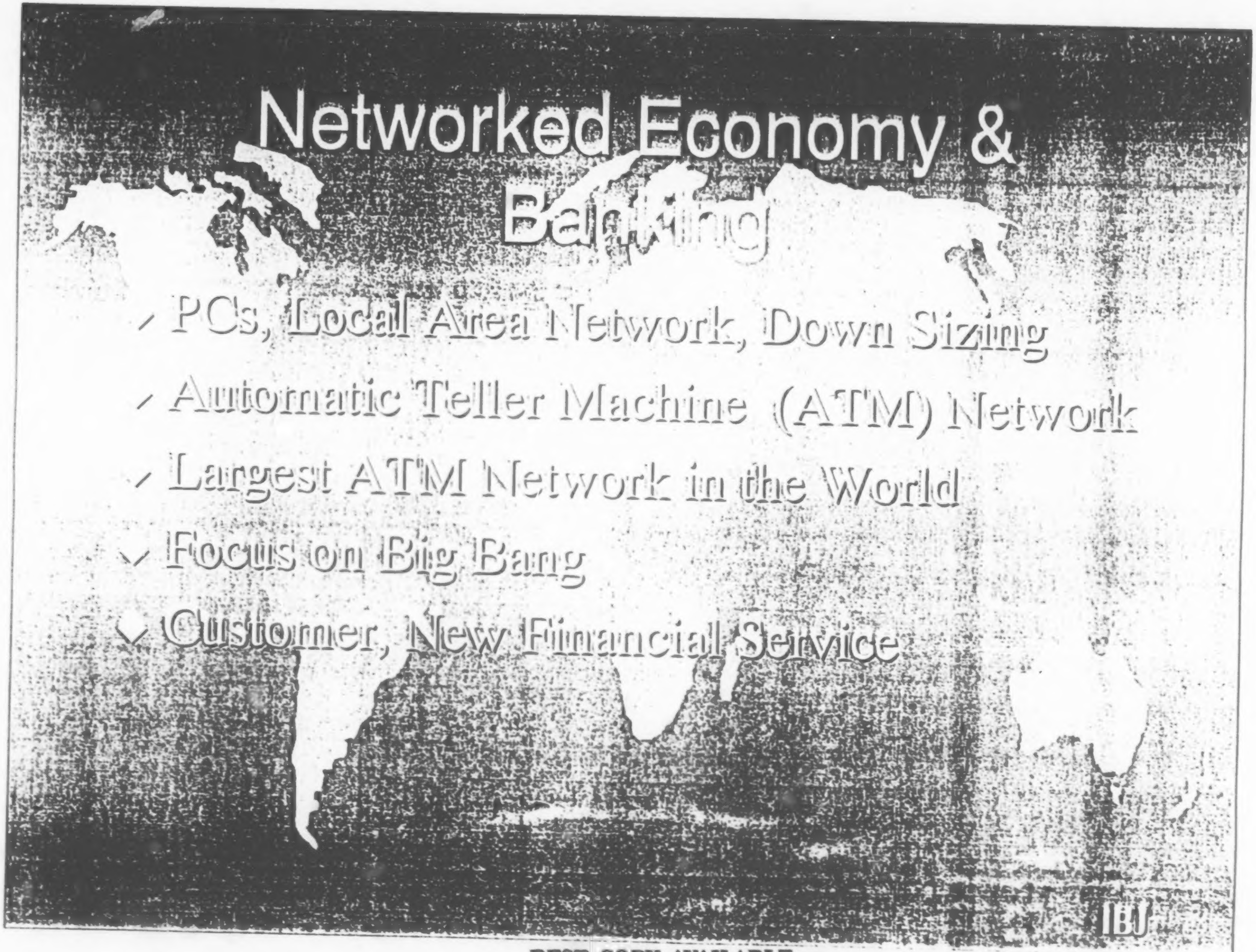
Network System in Banking Industry

- Recovery from Non-Performing Loan
- "Big Bang" in Japanese Financial Market
- Freer Competition & Tighter Monitoring
- Networking in Japanese Industry
- Banking Network

IBJ

✓ Internet Technology → ✓ Intranet, Extranet
✓ Networked PCs → ✓ Network for ALL
✓ Groupware → ✓ Enterprizeware
✓ Open Computing → ✓ End User Computing
✓ System Integration → ✓ Desktop & Legacy Transparency

Networking with high speed LAN & WAN



Networked Economy & Banking

- ✓ PCs, Local Area Network, Down Sizing
- ✓ Automatic Teller Machine (ATM) Network
- ✓ Largest ATM Network in the World
- ✓ Focus on Big Bang
- ✓ Customer, New Financial Service

IBJ

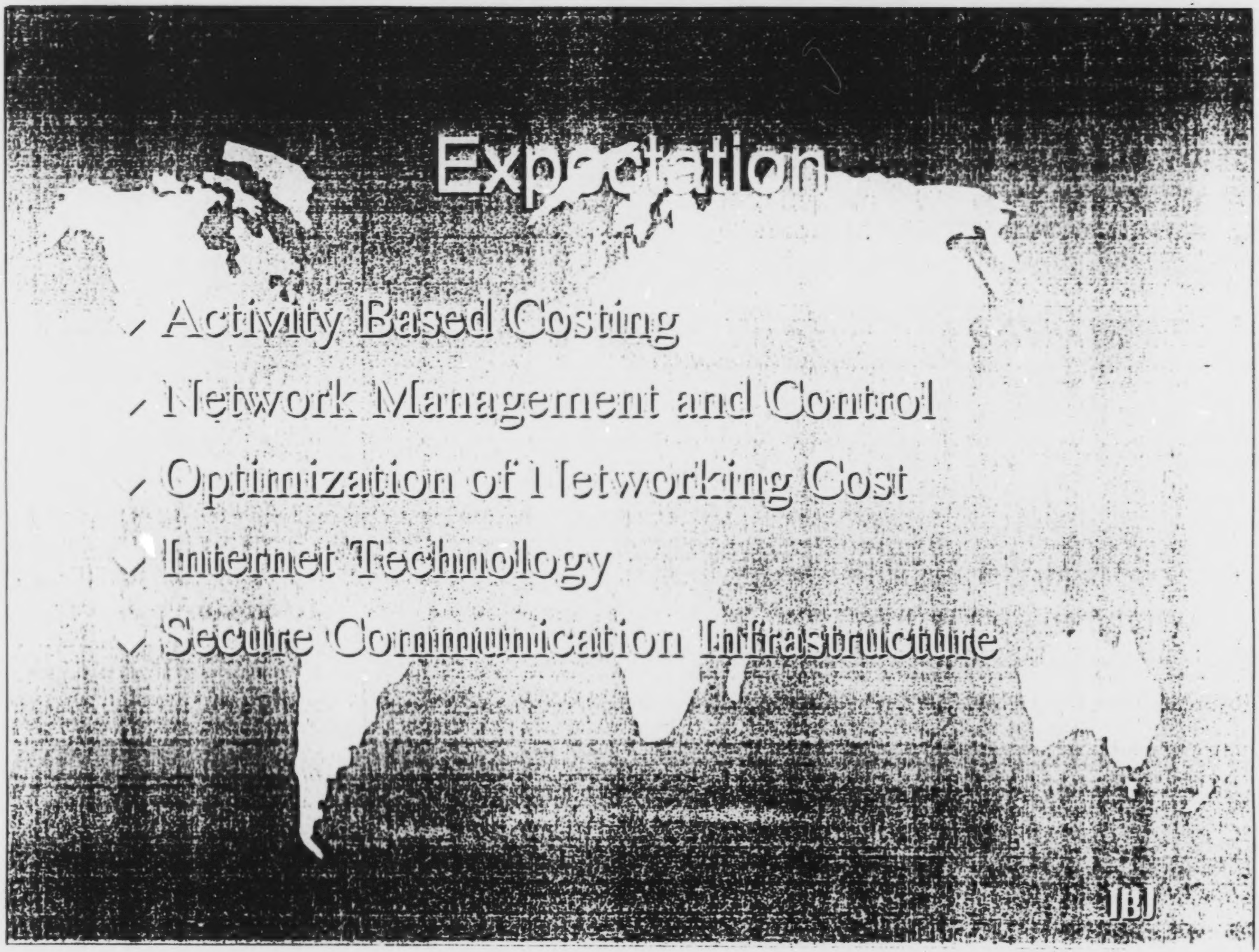
Banking and IT

	Impact	Actions	Systems
Big Bang	Less Regulation More Competition New Rules	Diversification New Products Group Global Strategy Information Tech Risk Management	Massive Data Multi Media 24 Hours Non Stop Powerful global network infrastructure
Society Change	Direct Finance Huge Asset Pension		
Technology Change	EC NC	Internet Banking	

Network

- ✓ Network is utility
- ✓ Too expensive pricing in Japan
- ✓ "Big Bang" in Global Telecom Industry
- ✓ How to be Globally Competitive?
- ✓ Additional New Value Added Services

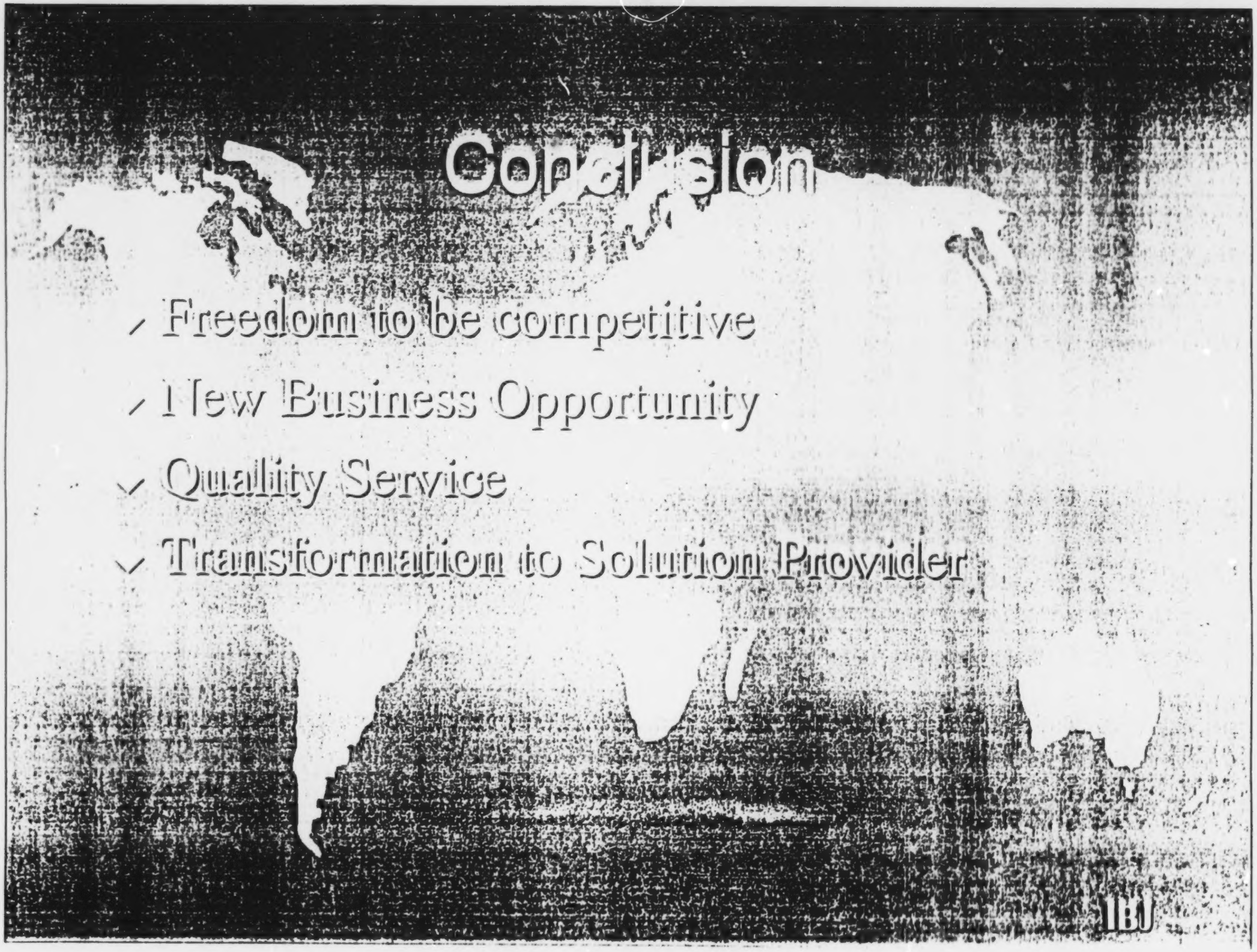
IBJ



Expectation

- ✓ Activity Based Costing
- ✓ Network Management and Control
- ✓ Optimization of Networking Cost
- ✓ Internet Technology
- ✓ Secure Communication Infrastructure

IBJ



Conclusion

- ✓ Freedom to be competitive
- ✓ New Business Opportunity
- ✓ Quality Service
- ✓ Transformation to Solution Provider

IBJ

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74

Platform and Equipment for Multimedia Network and Its Applications

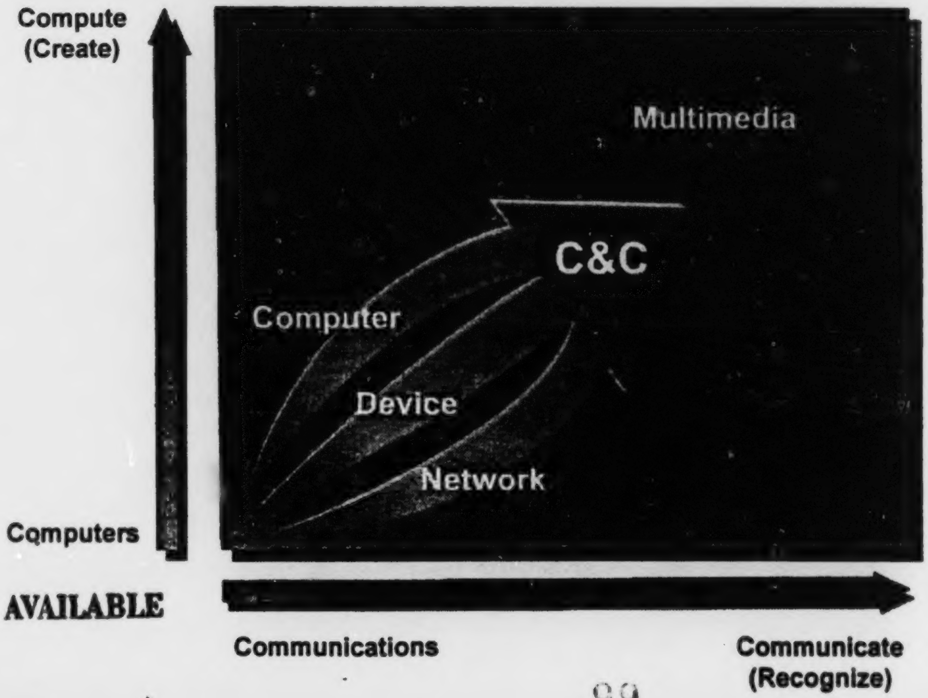
<PTC 1997 Mid Year Seminar>
Global Network Society: Business Opportunities and Challenges

June 4, 1997

Eiichi Yoshikawa
Senior Vice President
NEC Corporation
E-mail : yosikawa@mmj.ho.nec.co.jp

DEVELOPMENT OF C&C TECHNOLOGIES AND MULTIMEDIA

BIGL BE


Compute
(Create)
Multimedia
C&C
Computer
Device
Network
Computers
Communications
Communicate
(Recognize)

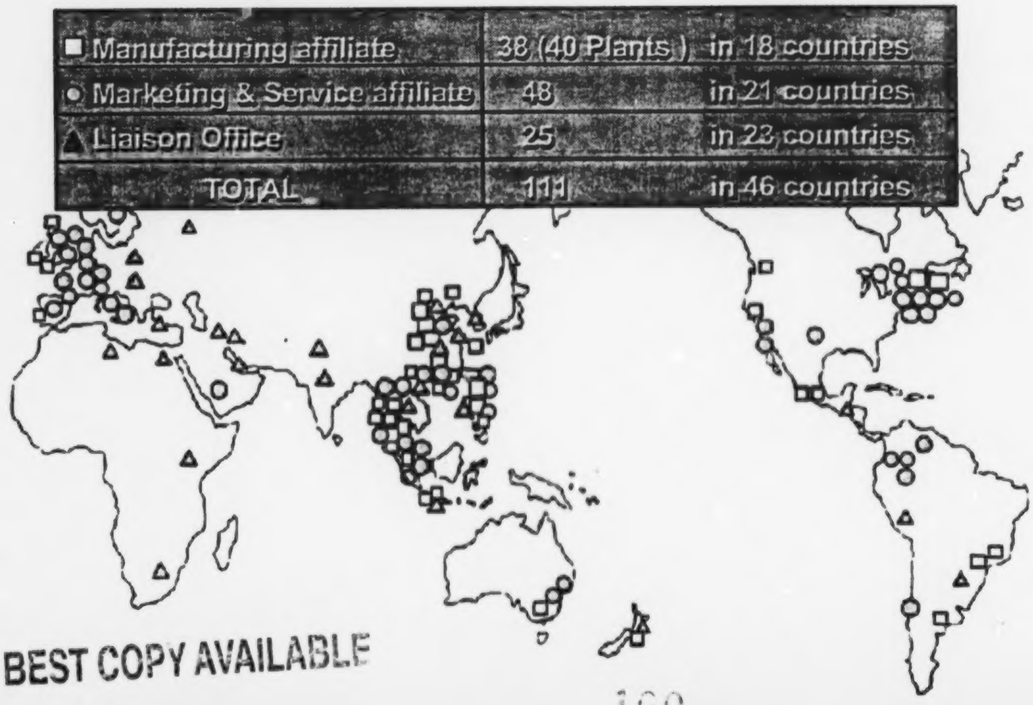
75

WORLD ELECTRONICS SUPPLIERS RANKING BIGL BE

(Sales:Billion $)

	Telecommunications			Computers			Semiconductors	
	Company	Sales		Company	Sales		Company	Sales
1	Alcatel	20.1	1	IBM	71.9	1	Intel	13.2
2	Lucent Technologies	18.4	2	Fujitsu	26.8	2	**NEC**	**11.3**
3	Ericsson	15.8	3	Hewlett-Packard	26.1	3	Toshiba	10.1
4	Motorola	14.4	4	**NEC**	**19.4**	4	Hitachi	9.1
5	**NEC**	**12.3**	5	Hitachi	16.2	5	Motorola	8.7
6	Siemens	11.7	6	Compaq	14.8	6	Samsung	8.3
7	Nortel	8.9	7	Digital	14.4	7	TI	7.8
Source:Probe Research '95			Source:Datamation '95			Source:Dataquest '95		

NEC WORLDWIDE [As of Jul., 1996] BIGL BE



□ Manufacturing affiliate	38 (40 Plants)	in 18 countries
○ Marketing & Service affiliate	48	in 21 countries
▲ Liaison Office	25	in 23 countries
TOTAL	111	in 46 countries

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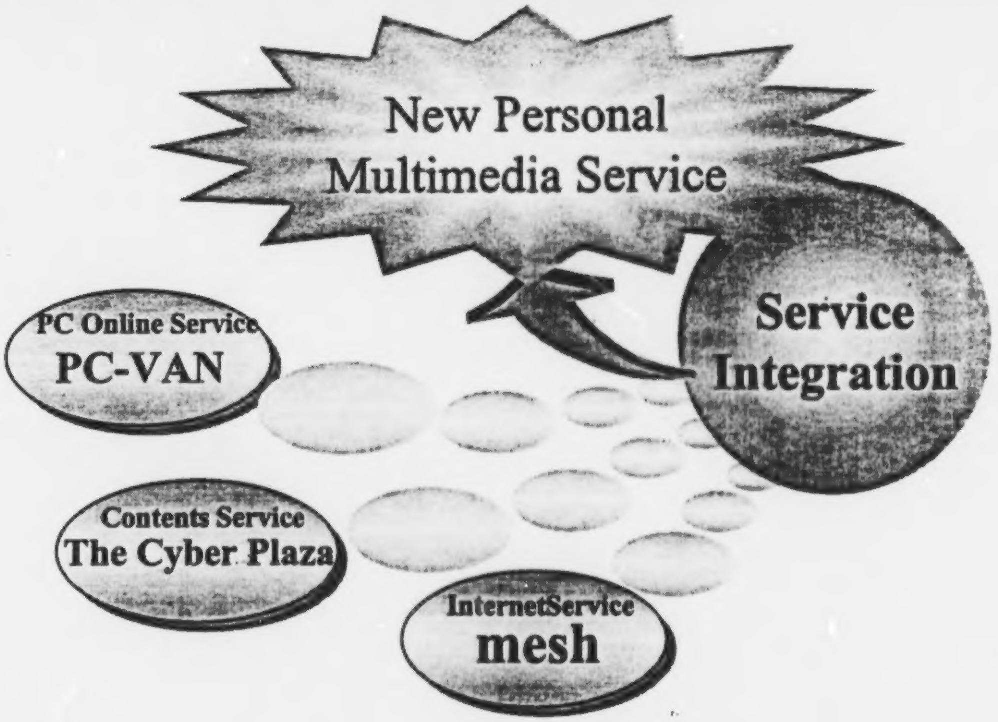
Direction of NEC's Personal Online Service BIGL BE



New Personal Multimedia Service

Service Integration

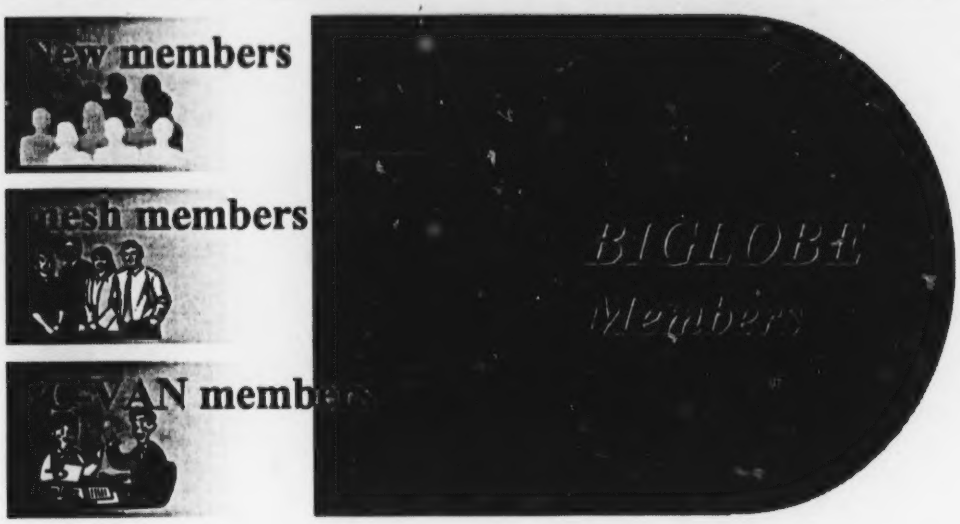
PC Online Service
PC-VAN

Contents Service
The Cyber Plaza

InternetService
mesh

BIGLOBE Membership System BIGL BE

PC-VAN, mesh members become BIGLOBE members



New members
mesh members
PC-VAN members
BIGLOBE Members

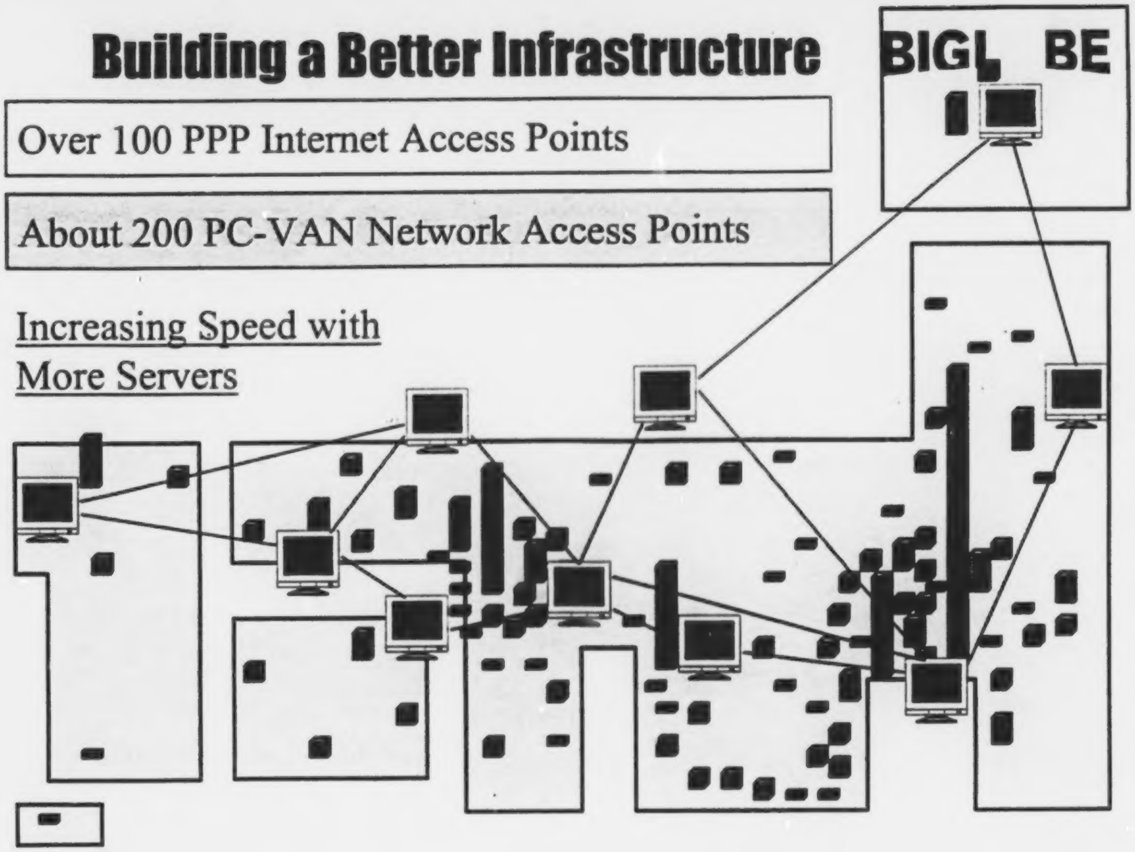
77

Building a Better Infrastructure

Over 100 PPP Internet Access Points

About 200 PC-VAN Network Access Points

Increasing Speed with More Servers

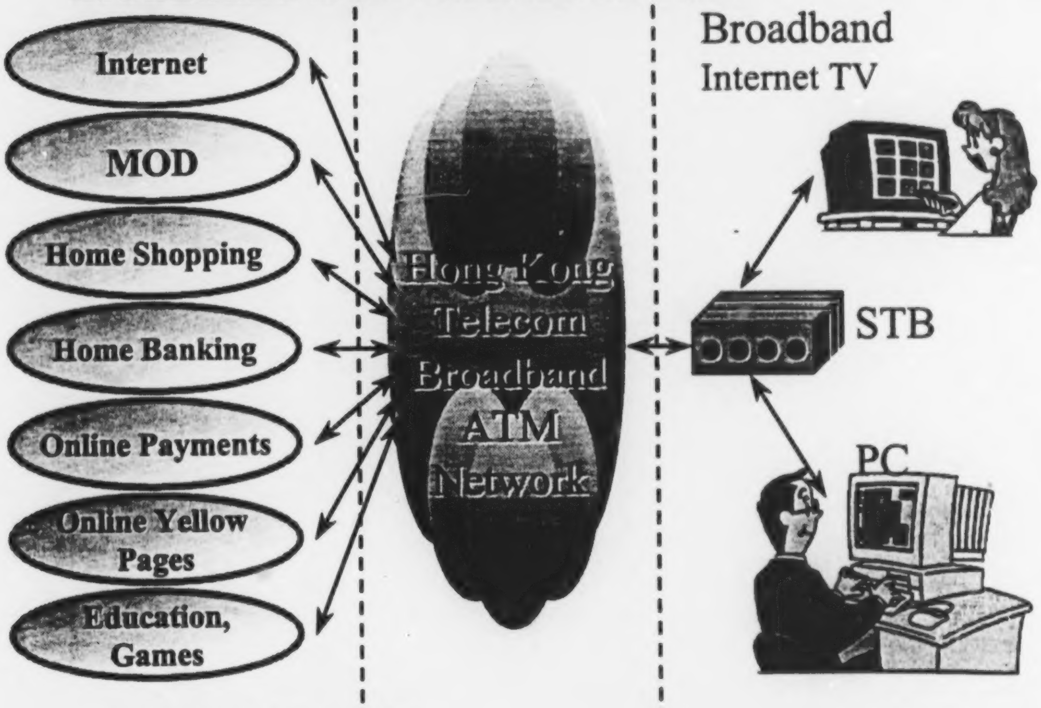


BIGL BE

Overseas Activities

Hong Kong Telecom Broadband MOD Network Service

BIGL BE


Broadband
Internet TV
Internet
MOD
Home Shopping
Home Banking
Online Payments
Online Yellow Pages
Education, Games
Hong Kong Telecom Broadband ATM Network
STB
PC

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79

China Economic Information Network

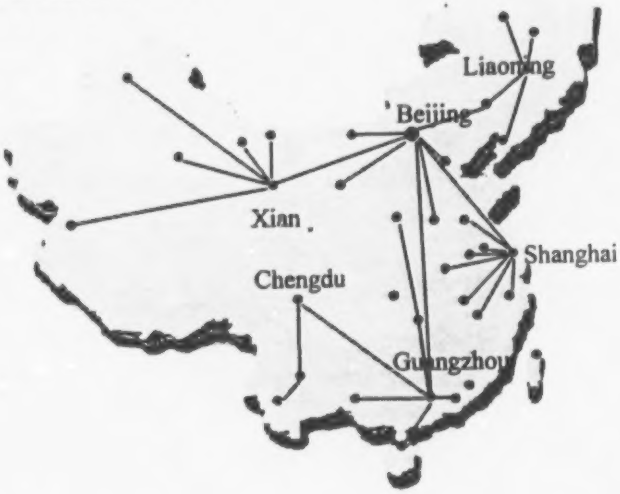
BIGL BE

- CEInet

Center: National Information Center (Beijing)

12 Access Points Nationwide (Dec. '96)

50 APs in '97

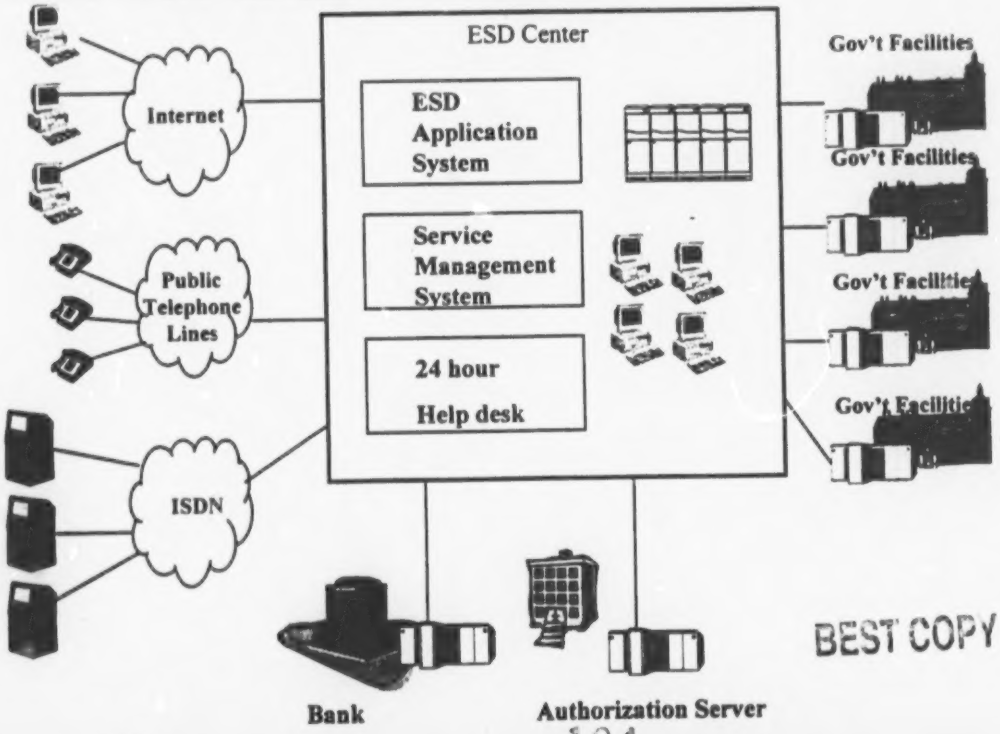

Liaoning
Beijing
Xian
Shanghai
Chengdu
Guangzhou

Service Description

- Connection Service
- Contents Service
  - Chinese Economic Information
  - Real Estate Information
  - Investment Opportunities
  - Chinese Legal Regulations
  - Useful Lifestyle Information

Victoria, Australia
Public Service Network(ESD)

BIGL BE


ESD Center
ESD Application System
Service Management System
24 hour Help desk
Internet
Public Telephone Lines
ISDN
Gov't Facilities
Gov't Facilities
Gov't Facilities
Gov't Facilities
Bank
Authorization Server

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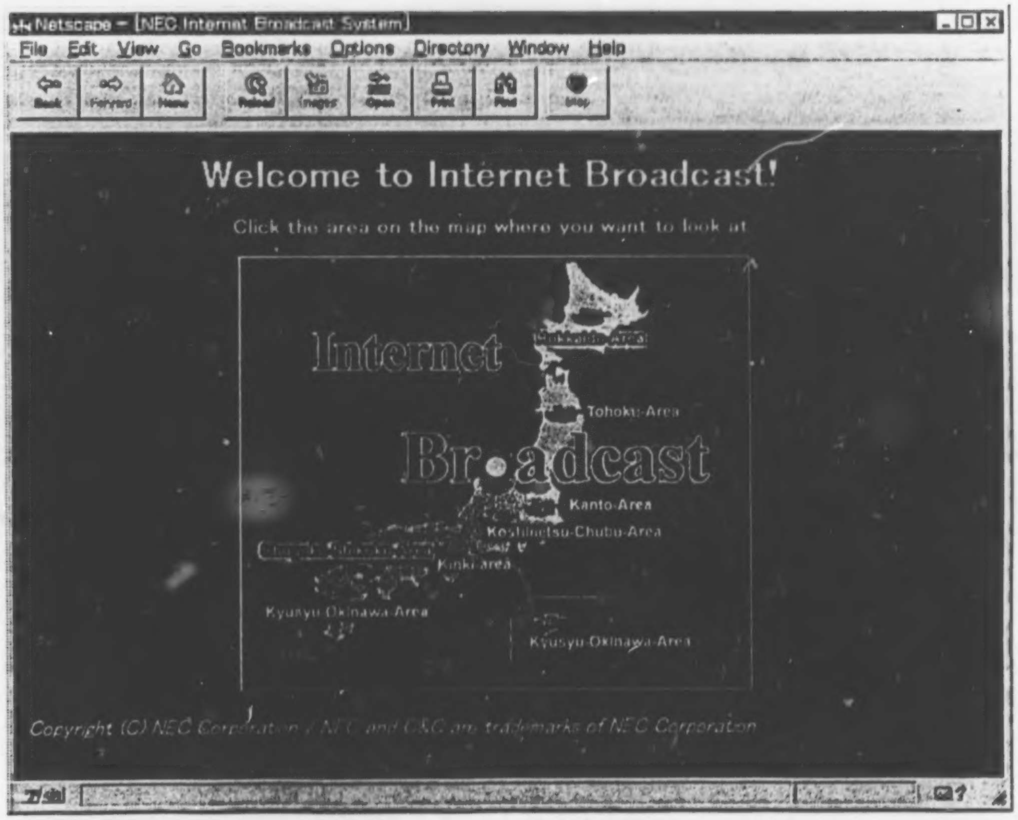
BIGL BE

Internet Broadcasting


Netscape - [NEC Internet Broadcast System]
File Edit View Go Bookmarks Options Directory Window Help
Back Forward Home Reload Images Open Print Find Stop
Internet
Broadcast
Hokkaido-Area
Tohoku-Area
Kanto-Area
Koshinetsu-Chubu-Area
Kinki-area
Kyusyu-Okinawa-Area
Kyusyu-Okinawa-Area

Welcome to Internet Broadcast!

Click the area on the map where you want to look at

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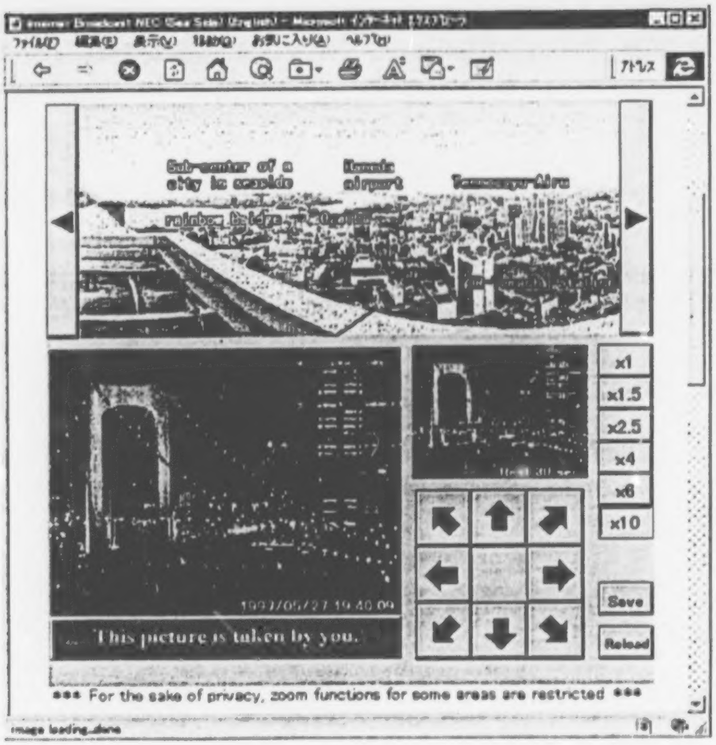
BIGL BE


ﾌｧｲﾙ(F)
編集(E)
表示(V)
移動(G)
お気に入り(A)
ﾍﾙﾌﾟ(H)
ｱﾄﾞﾚｽ
Sub-center of a city in seaside
Haneda airport
rainbow bridge
1997/05/27 19:40:09
x1
x1.5
x2.5
x4
x6
x10
Save
Reload
image loading done

This picture is taken by you.

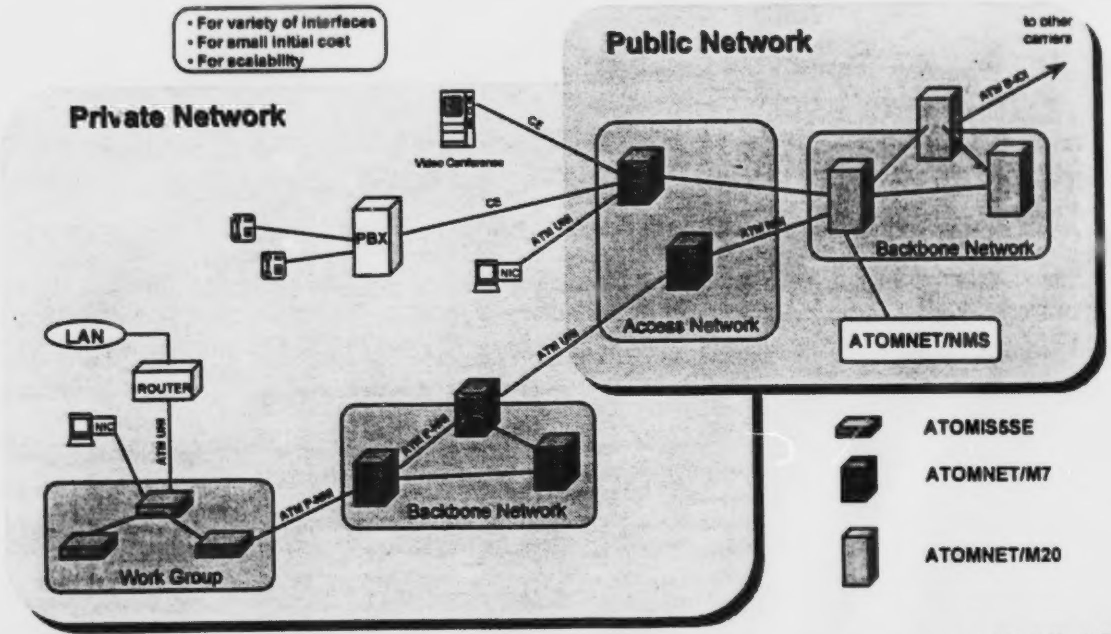
*** For the sake of privacy, zoom functions for some areas are restricted ***

82

Multimedia System & Stations

ATM SW System Line Up (1)

- For variety of interfaces
- For small initial cost
- For scalability

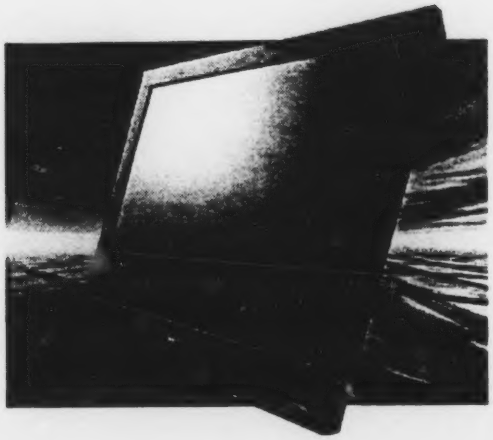

Public Network
to other carriers
Private Network
Video Conference
CE
CE
PBX
ATM UNI
NIC
ATM NNI
ATM B-ICI
Backbone Network
Access Network
ATOMNET/NMS
LAN
ROUTER
NIC
ATM UNI
ATM UNI
ATM P-NNI
ATM P-NNI
Backbone Network
Work Group
ATOMIS5SE
ATOMNET/M7
ATOMNET/M20

83

Plasma Display Panel BIGL BE

33” and 42” Color Plasma Display Panels

- Multimedia Interface (PC, HiVision, Video)
- Screen Thickness: 9.9cm

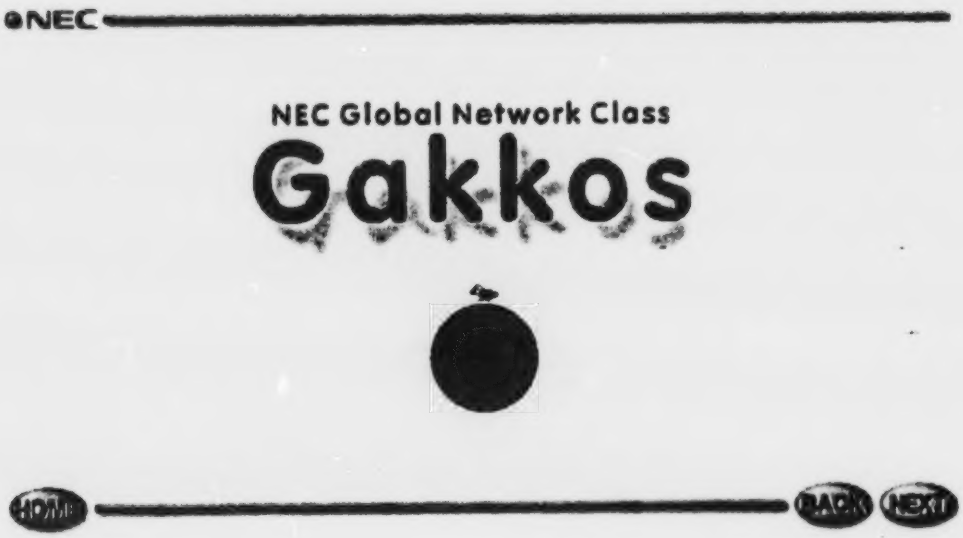


Mobile Information Terminal BIGL BE

Mobile Gear

- **Easy Internet/Intranet E-mail Access On the Go**
- **One-touch Mail Functions**
- **Communicate Whenever and Wherever You Like**

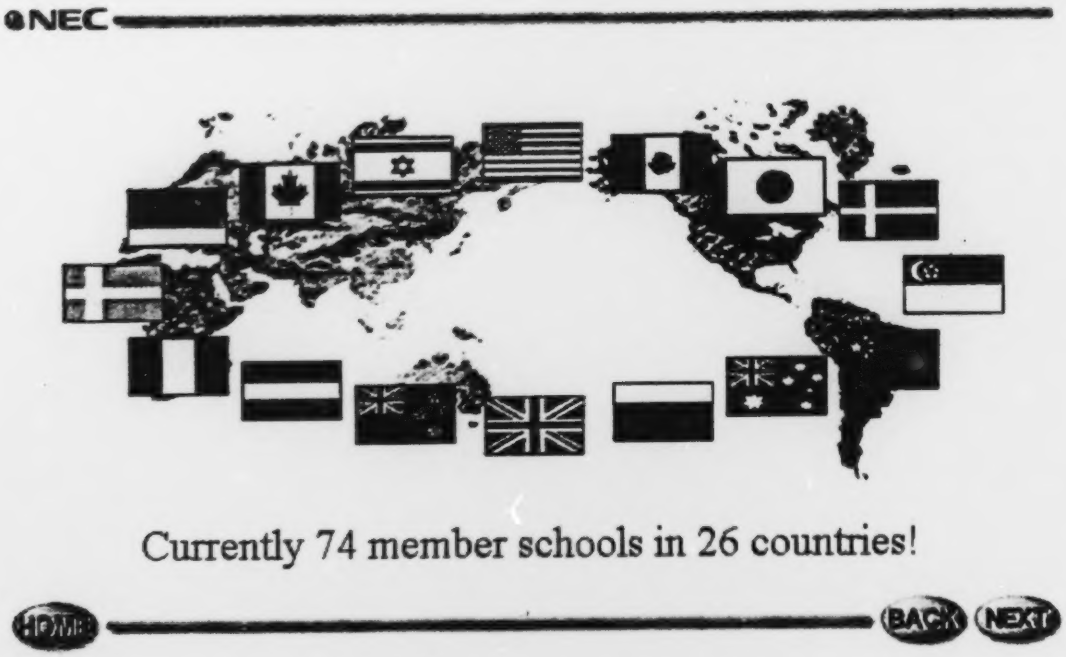
Edutainment



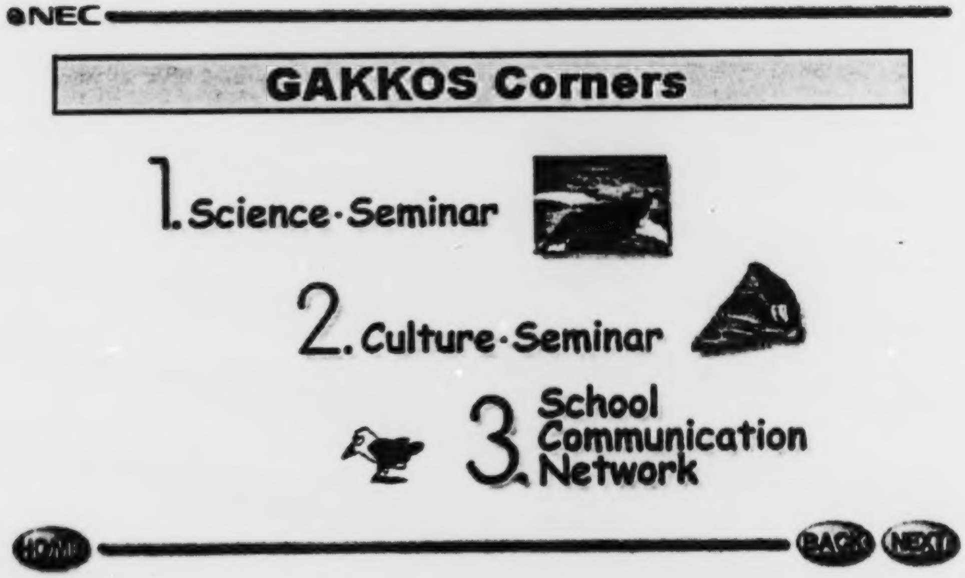
NEC Global Network Class

Gakkos

NEC
HOME
BACK
NEXT


NEC
HOME
BACK
NEXT

Currently 74 member schools in 26 countries!


NEC
HOME
BACK
NEXT

GAKKOS Corners

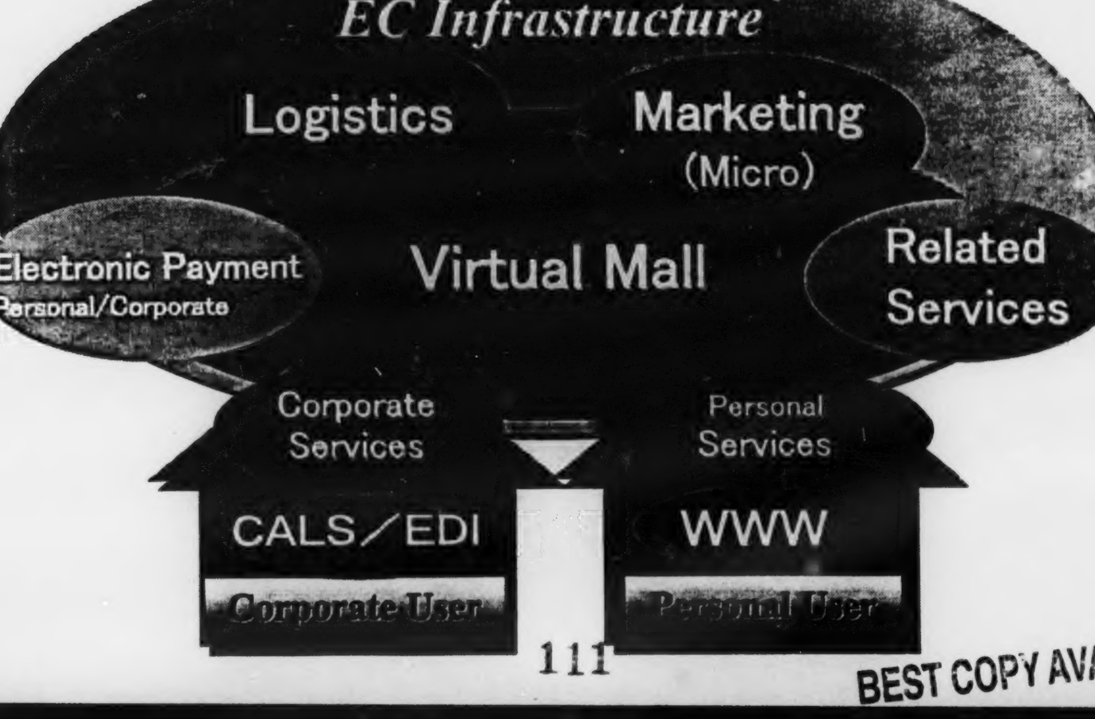
1. Science·Seminar
2. Culture·Seminar
3. School Communication Network

BIGL BE

EC Promotion

NEC View on EC

BIGL BE



Electronic Economy

EC Infrastructure

Logistics

Marketing
(Micro)

Electronic Payment
Personal/Corporate

Virtual Mall

Related
Services

Corporate
Services

Personal
Services

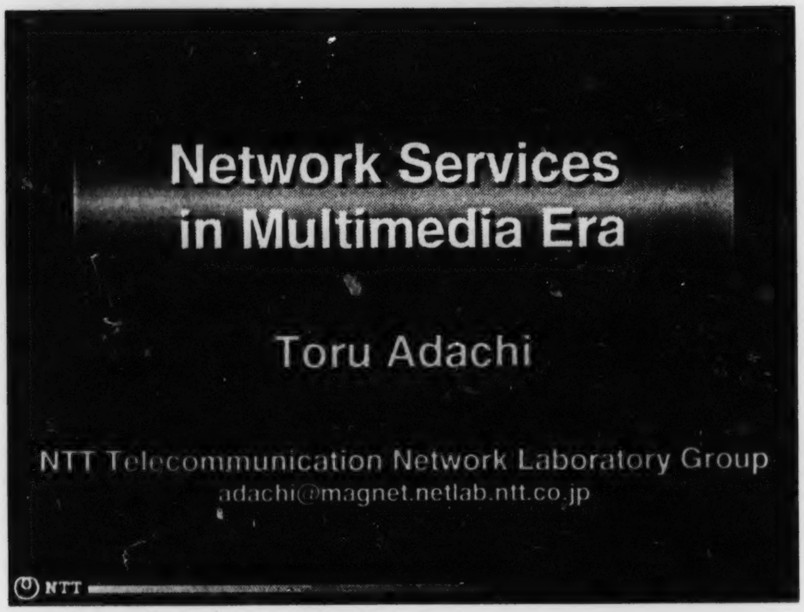
CALS／EDI

WWW

Corporate User

Personal User

1



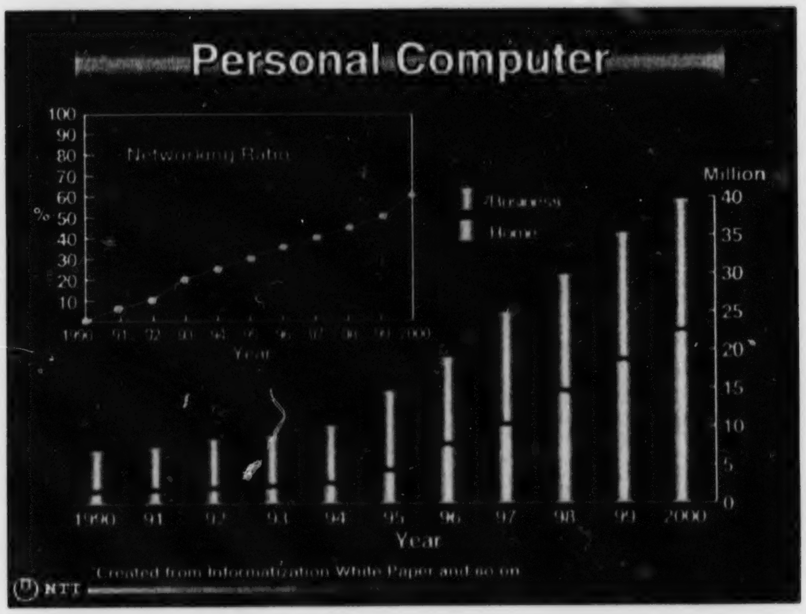
Network Services in Multimedia Era

Toru Adachi

NTT Telecommunication Network Laboratory Group
adachi@magnet.netlab.ntt.co.jp

NTT

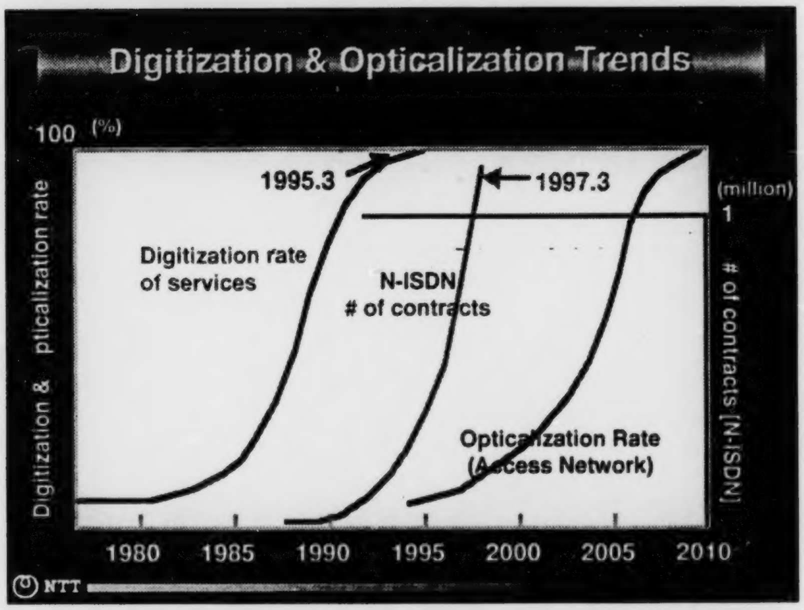
2



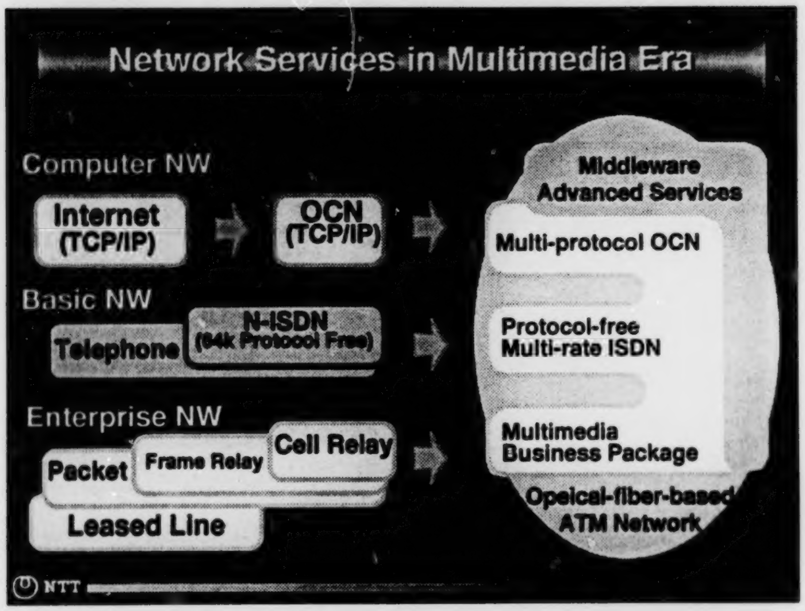
Personal Computer

Created from Informatization White Paper and so on

NTT

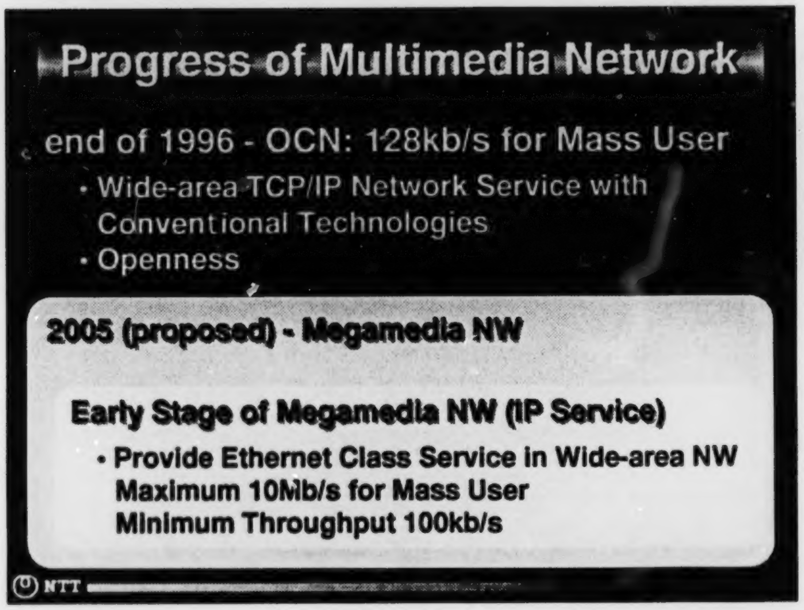


Digitization & Opticalization Trends



Network Services in Multimedia Era

Computer NW
Internet (TCP/IP)
OCN (TCP/IP)
Basic NW
Telephone
N-ISDN (64k Protocol Free)
Enterprise NW
Packet
Frame Relay
Cell Relay
Leased Line
Middleware Advanced Services
Multi-protocol OCN
Protocol-free Multi-rate ISDN
Multimedia Business Package
Opeical-fiber-based ATM Network
NTT



Progress of Multimedia Network

end of 1996 - OCN: 128kb/s for Mass User

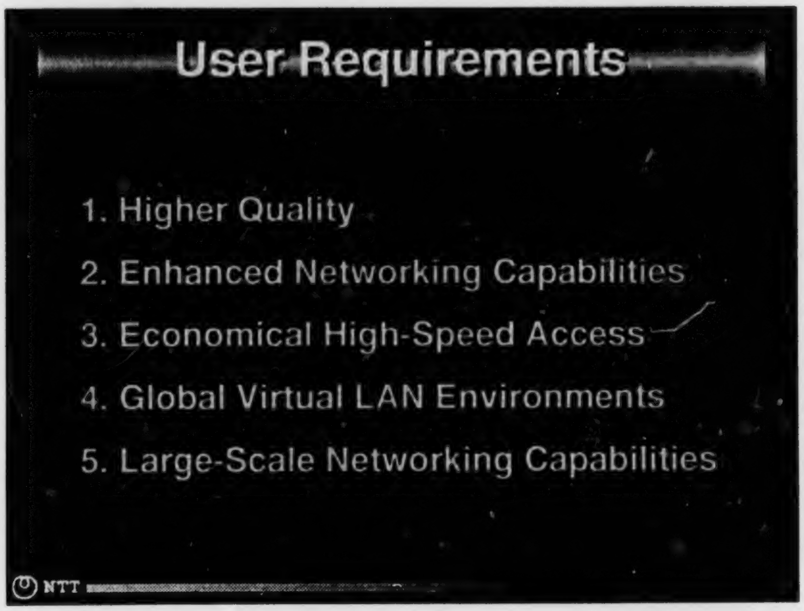
- Wide-area TCP/IP Network Service with Conventional Technologies
- Openness

2005 (proposed) - Megamedia NW

Early Stage of Megamedia NW (IP Service)

- **Provide Ethernet Class Service in Wide-area NW**
  Maximum 10Mb/s for Mass User
  Minimum Throughput 100kb/s

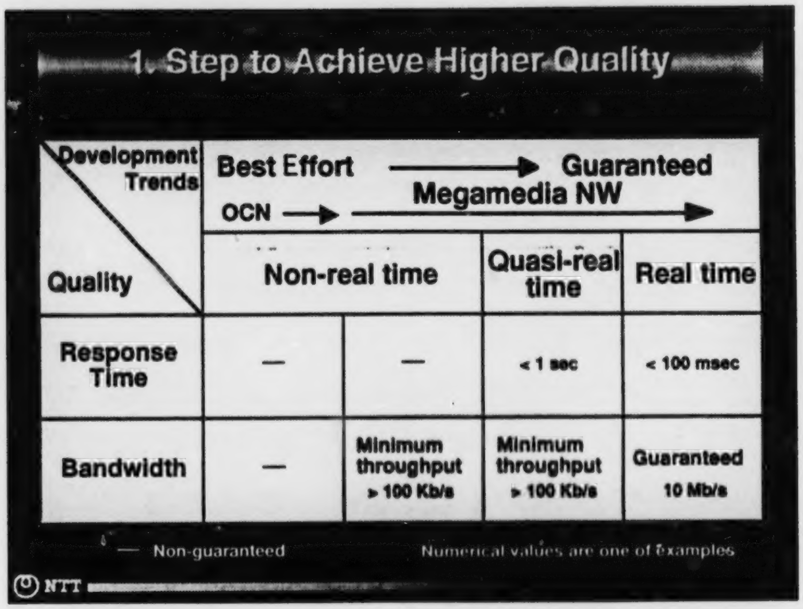
NTT



User Requirements

1. Higher Quality
2. Enhanced Networking Capabilities
3. Economical High-Speed Access
4. Global Virtual LAN Environments
5. Large-Scale Networking Capabilities

NTT



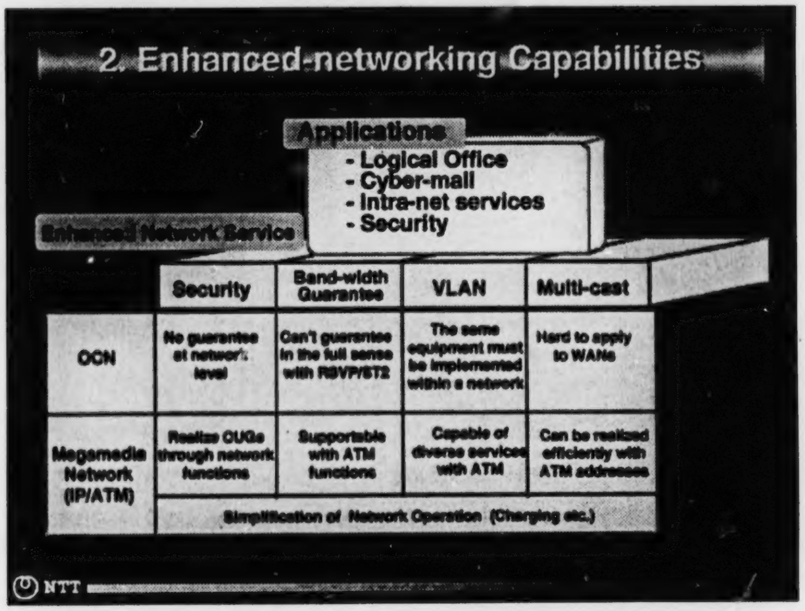
1. Step to Achieve Higher Quality

Development Trends	Best Effort → Guaranteed OCN → Megamedia NW			
Quality	Non-real time		Quasi-real time	Real time
Response Time	—	—	< 1 sec	< 100 msec
Bandwidth	—	Minimum throughput > 100 Kb/s	Minimum throughput > 100 Kb/s	Guaranteed 10 Mb/s

— Non-guaranteed

Numerical values are one of examples

NTT



2. Enhanced-networking Capabilities

Applications

- Logical Office
- Cyber-mall
- Intra-net services
- Security

Enhanced Network Service

	Security	Band-width Guarantee	VLAN	Multi-cast
OCN	No guarantee at network level	Can't guarantee in the full sense with RSVP/ST2	The same equipment must be implemented within a network	Hard to apply to WANs
Megamedia Network (IP/ATM)	Realize CUGs through network functions	Supportable with ATM functions	Capable of diverse services with ATM	Can be realized efficiently with ATM addresses
	Simplification of Network Operation (Charging etc.)			

NTT

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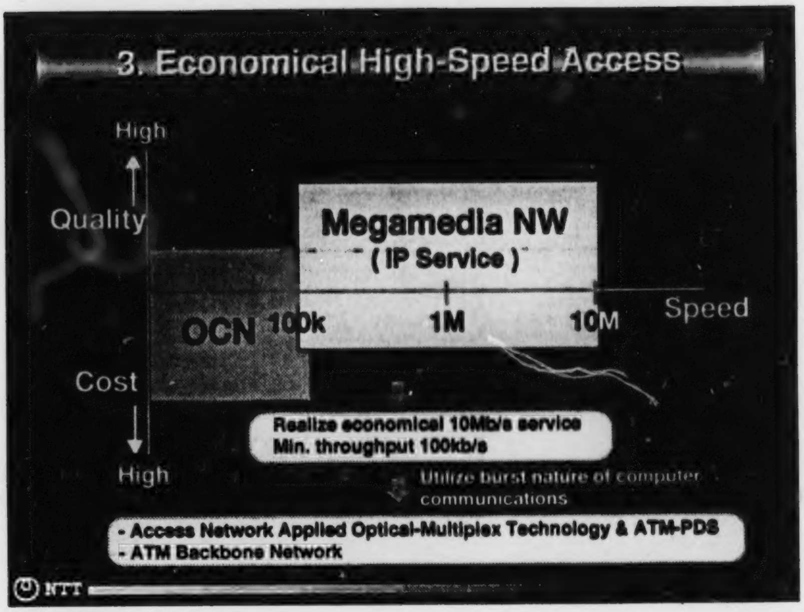
9



3. Economical High-Speed Access

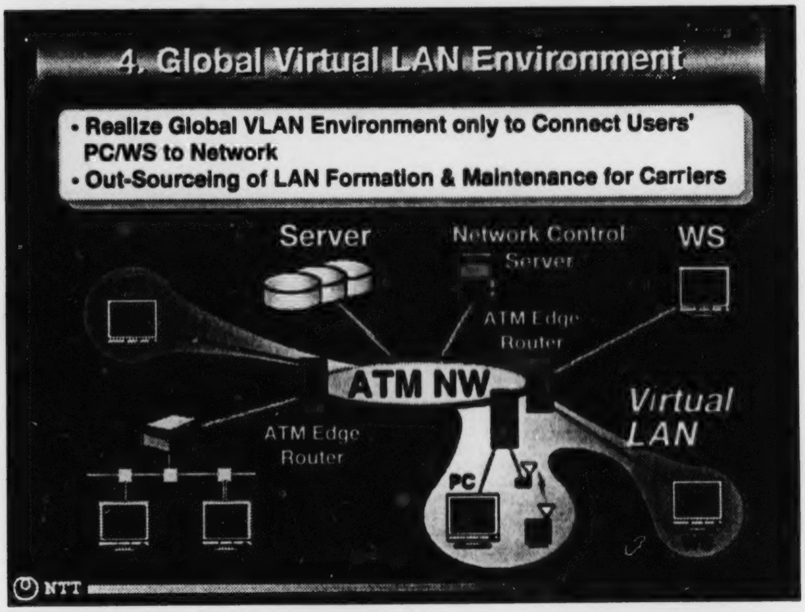
High
Quality
Cost
High
Megamedia NW
(IP Service)
OCN
100k
1M
10M
Speed
NTT

Realize economical 10Mb/s service
Min. throughput 100kb/s

Utilize burst nature of computer communications

- Access Network Applied Optical-Multiplex Technology & ATM-PDS
- ATM Backbone Network

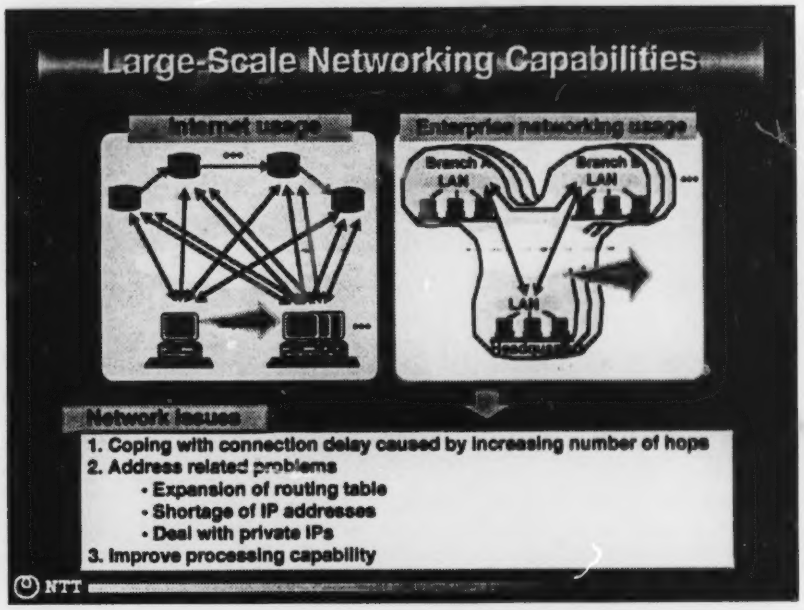
10



4. Global Virtual LAN Environment

- Realize Global VLAN Environment only to Connect Users' PC/WS to Network
- Out-Sourceing of LAN Formation & Maintenance for Carriers

Server
Network Control Server
WS
ATM Edge Router
ATM NW
Virtual LAN
ATM Edge Router
PC
NTT



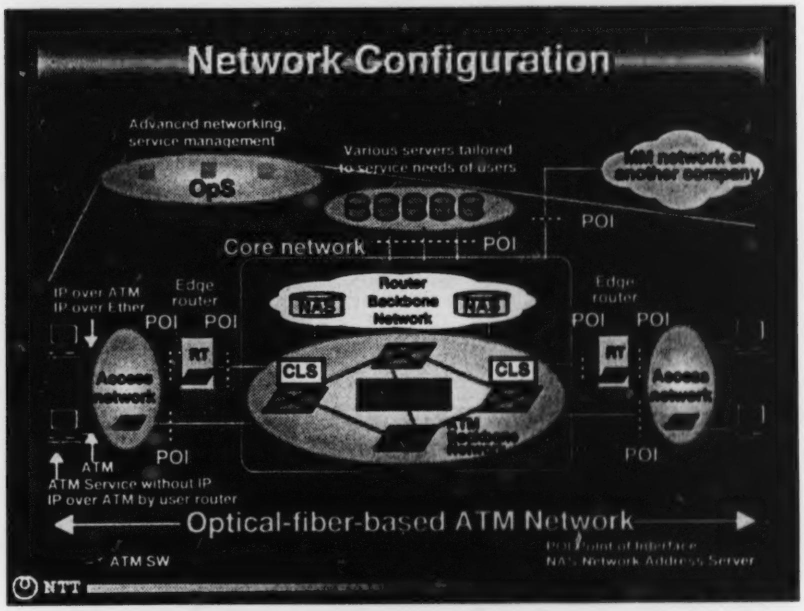
Large-Scale Networking Capabilities

Internet usage
Enterprise networking usage
Branch A
LAN
Branch B
LAN
LAN
Headquarters

Network issues

1. Coping with connection delay caused by increasing number of hops
2. Address related problems
    - Expansion of routing table
    - Shortage of IP addresses
    - Deal with private IPs
3. Improve processing capability

NTT

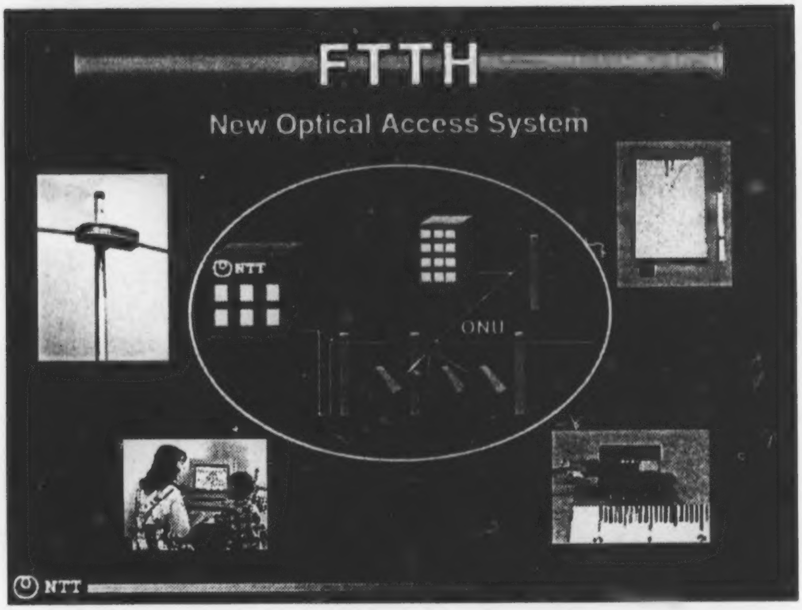


Network Configuration

Advanced networking, service management
OpS
Various servers tailored to service needs of users
MM network of another company
POI
Core network
POI
Router Backbone Network
NAS
NAS
IP over ATM
IP over Ether
Edge router
POI
POI
RT
CLS
CLS
Access network
ATM Backbone Network
Edge router
POI
POI
RT
Access network
ATM
POI
POI
ATM Service without IP
IP over ATM by user router
Optical-fiber-based ATM Network
ATM SW

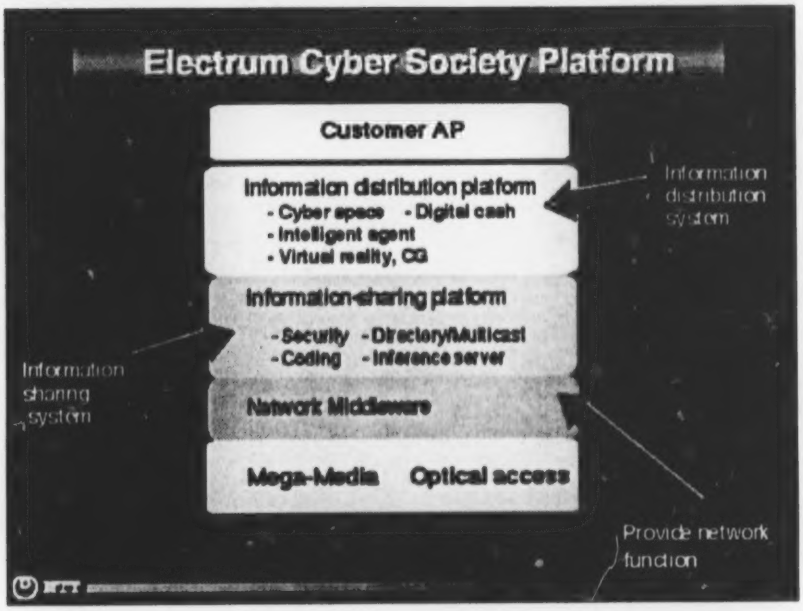
POI:Point of Interface
NAS:Network Address Server

NTT



FTTH

New Optical Access System



Electrum Cyber Society Platform

Customer AP

Information distribution platform
- Cyber space
- Digital cash
- Intelligent agent
- Virtual reality, CG

Information-sharing platform
- Security
- Directory/Multicast
- Coding
- Inference server

Network Middleware

Mega-Media **Optical access**

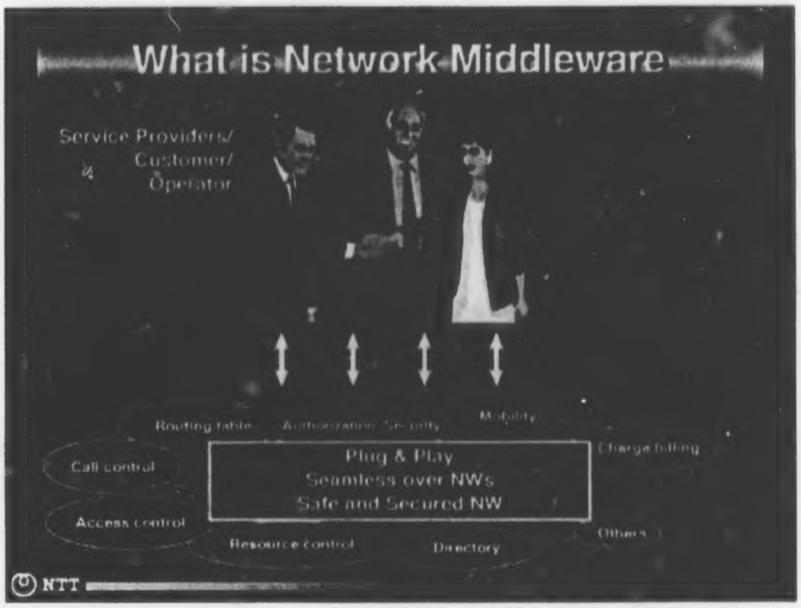
Information distribution system

Information sharing system

Provide network function

94

15



What is Network Middleware

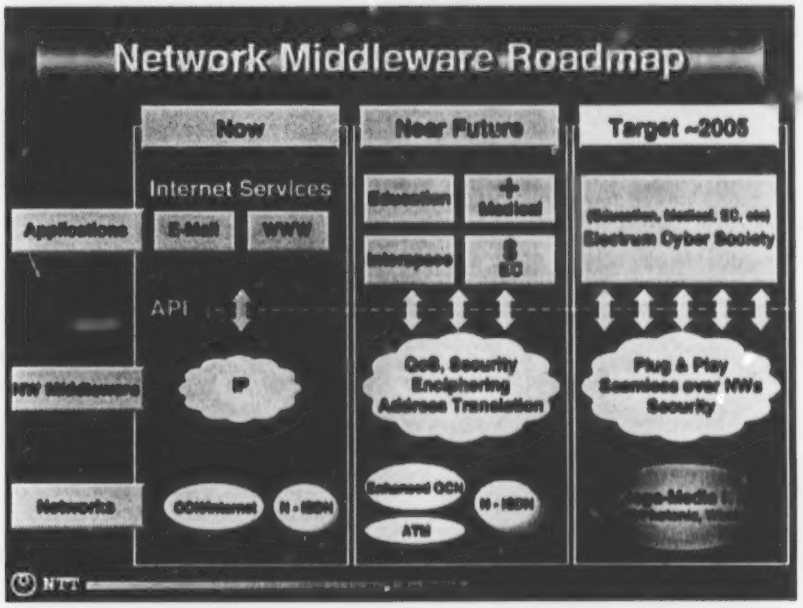
Service Providers/
Customer/
Operator

Routing table
Authorization Security
Mobility
Charge billing
Call control
Access control
Resource control
Directory
Others

Plug & Play
Seamless over NWs
Safe and Secured NW

NTT

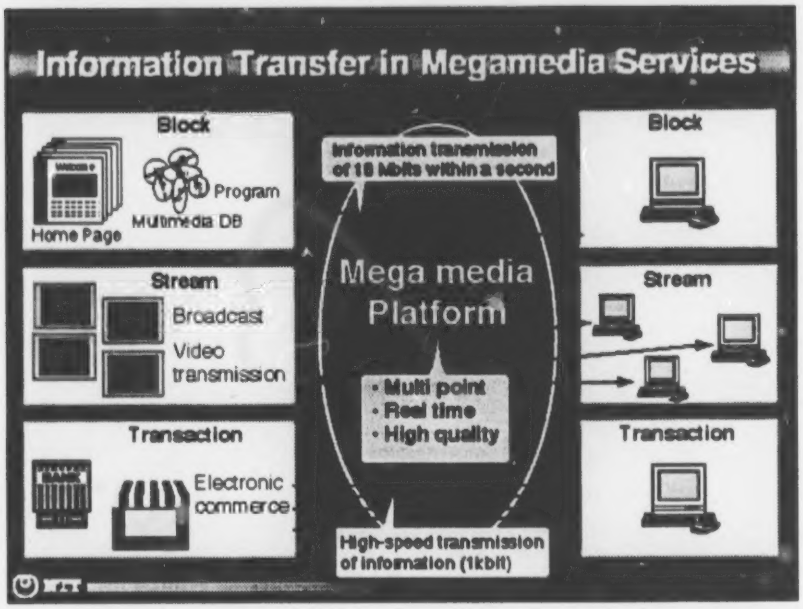
16



Network Middleware Roadmap

	Now	Near Future	Target ~2005
Applications	Internet Services E-Mail WWW	Education Medical Interspace EC	(Education, Medical, EC, etc) Electrum Cyber Society
API			
NW Middleware	IP	QoS, Security Enciphering Address Translation	Plug & Play Seamless over NWs Security
Networks	OCN/Internet N-ISDN	Enhanced OCN ATM N-ISDN	[illegible]

NTT



Information Transfer in Megamedia Services

Block

Home Page

Multimedia DB

Program

Stream

Broadcast

Video transmission

Transaction

Electronic commerce

Information transmission of 18 Mbits within a second

Mega media Platform

- **Multi point**
- **Real time**
- **High quality**

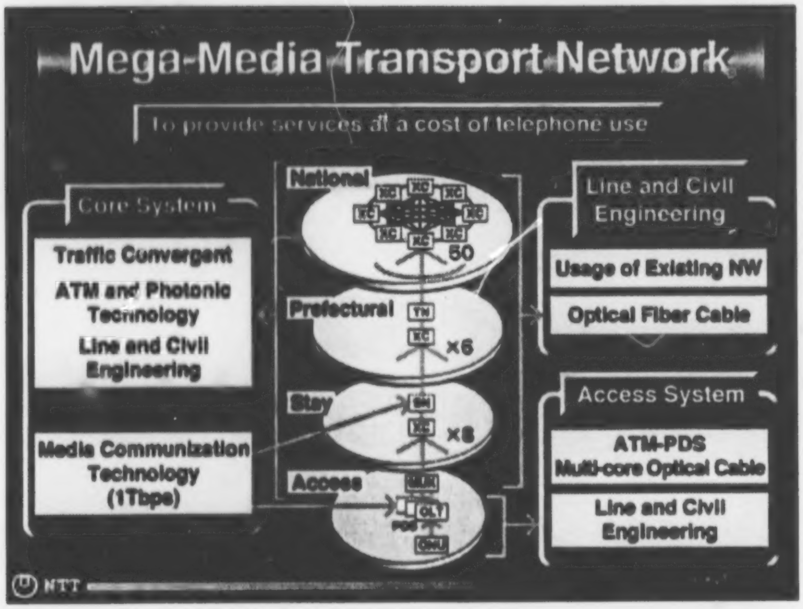
High-speed transmission of information (1kbit)

Block

Stream

Transaction

NTT



Mega-Media Transport Network

To provide services at a cost of telephone use

Core System

Traffic Convergent

ATM and Photonic Technology

Line and Civil Engineering

Media Communization Technology (1Tbps)

National

Prefectural

Stay

Access

Line and Civil Engineering

Usage of Existing NW

Optical Fiber Cable

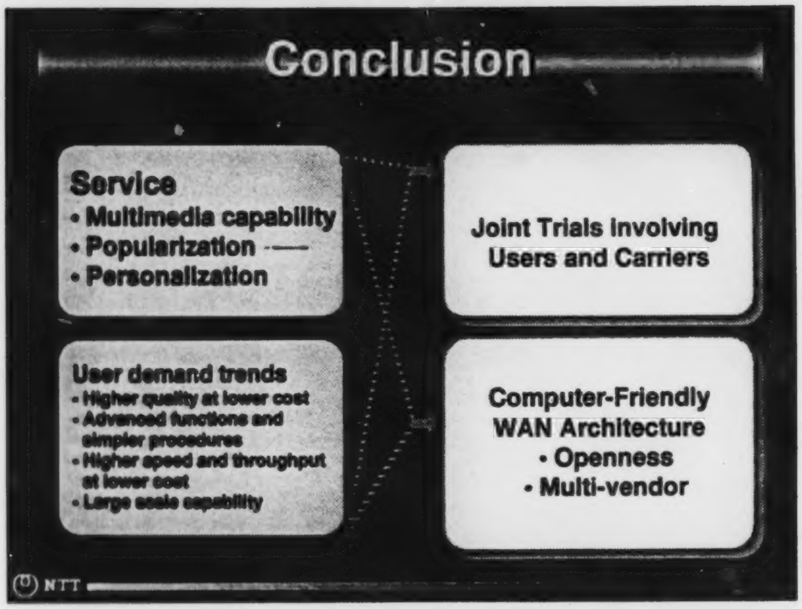
Access System

ATM-PDS
Multi-core Optical Cable

Line and Civil Engineering

NTT

96



Conclusion

Service
- Multimedia capability
- Popularization
- Personalization

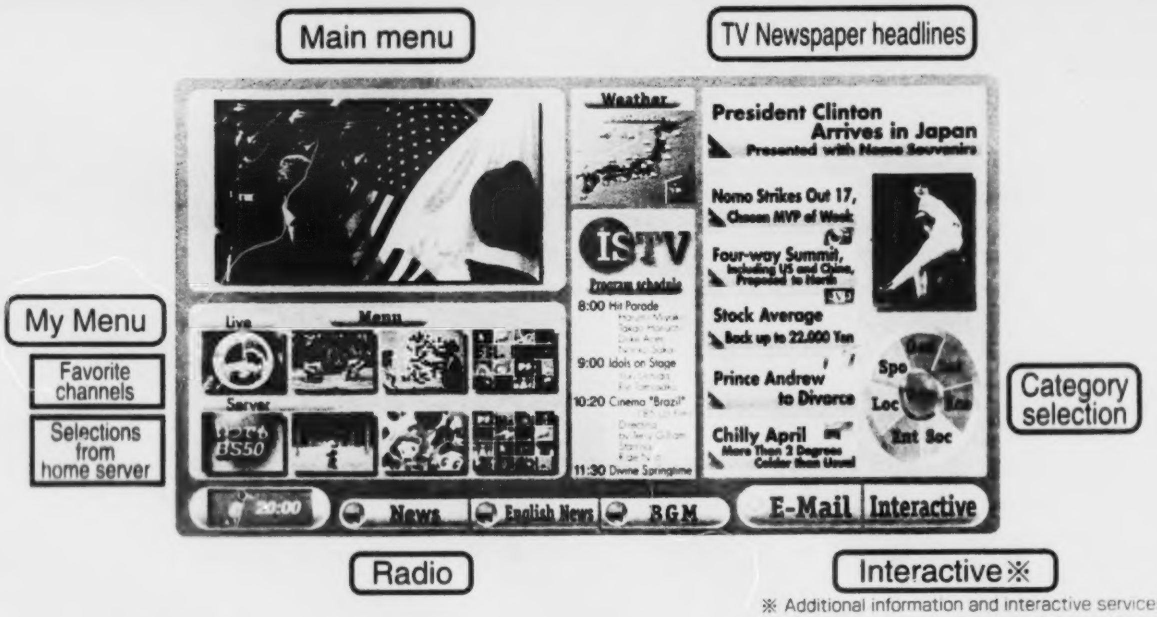
User demand trends
- Higher quality at lower cost
- Advanced functions and simpler procedures
- Higher speed and throughput at lower cost
- Large scale capability

Joint Trials involving Users and Carriers

Computer-Friendly WAN Architecture
- Openness
- Multi-vendor

NTT

Viewer's Service Integration (ISTV Menu Screen)


Main menu
TV Newspaper headlines
My Menu
Favorite channels
Selections from home server
Category selection
Radio
Interactive※
Weather
ISTV
Program schedule
8:00 Hit Parade
9:00 Idols on Stage
10:20 Cinema "Brazil"
11:30 Divine Springtime
Live
Menu
Server
BS50
President Clinton Arrives in Japan
Presented with Nomo Souvenirs
Nomo Strikes Out 17, Chosen MVP of Week
Four-way Summit, Including US and China, Proposed to North
Stock Average
Back up to 22,000 Yen
Prince Andrew to Divorce
Chilly April
More Than 2 Degrees Colder than Usual
Spo
Loc
Int
Soc
20:00
News
English News
BGM
E-Mail
Interactive

※ Additional information and interactive services can be obtained at a touch on the remote control

1 Anytime functions

ISTV is to have a "built-in home server" for automatic recording and reproduction. Broadcasters can transmit stock-type programs for each day all at once, perhaps at a fixed time in the morning, and then broadcast at fixed intervals automatically updated news and weather information. Viewers can watch these at home at any time they like through a simple "home interactive" system. This is called the "anytime functions."

Anytime news

This function allows viewers to select the latest news in a variety of ways. For example, the latest news items can be recorded automatically in the built-in home server, so that they can be retrieved with a click of the remote control on the screen icons. Headline news on the TV Newspaper can also be called up by item, by category or in full detail.

- Automatic recording and one-touch retrieval of TV news
- 24 hour headline news on the TV Newspaper
- 24 hour radio news

Anytime weather forecasts

Viewers can acquire the latest weather information, updated automatically. By clicking "weather forecasts" on the menu screen, the latest weather information appears on the full screen, followed by local weather in detail.

Anytime program schedule and guide

This shows a program guide on the screen, just like the contents guide of a newspaper or magazine. If a program indicated on the screen is selected, the home server records it automatically.

Anytime video

A variety of videos can be automatically recorded and be called up on the screen at a click.

Anytime audio

Audio programs such as radio news and music are as easily available as the TV services.

2 "My Menu"

ISTV will be "intelligent TV" with learning ability to memorize what individual viewers want to watch. "My menu" shows, on the small screen windows, programs currently on the viewer's favorite channels and those programs stored in the home server.

3 TV Newspaper headlines

The TV Newspaper shows important items, updated around the clock, by category: general, international, economic, social, culture/entertainment, local and sports. Full-length news items can then be clicked onto the screen.

©NHK 1996-10

The Next Generation:
The Evolution toward Integrated Services TV

ISTV is a completely new type of intelligent TV, combining the functions of a personal computer and video deck. It is also high-definition TV, able to show exceptionally clear images and text. ISTV in the Multimedia Age will be able to provide many services through just one screen.

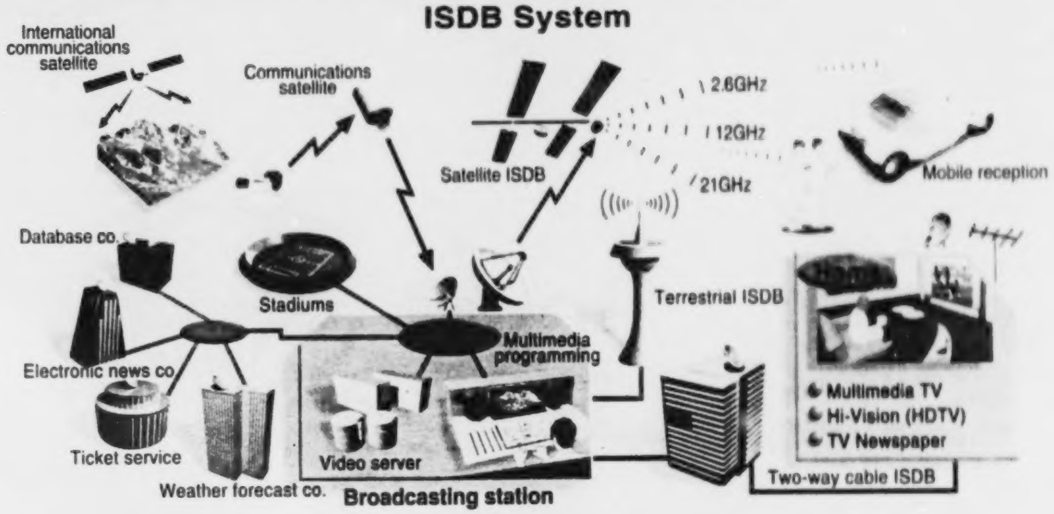
Evolving TV in the Multimedia Age

TV can transmit around the clock news and other information considered important for viewers. If such an enormous amount of information can be stored in a TV set at home, TV will definitely become more attractive and accessible.

- **Built-in Home Server**
  - **Easy Interactivity at home**
- **Menu Screen**
- **Media Fusion**
  - **Browser for All Media**
- **Intelligent Agent Functions**

NHK is promoting the research and development of a revolutionary type of TV transmission system, known as Integrated Services Digital Broadcasting (ISDB), for the 21st century. ISTV means a receiver for ISDB.

ISDB System


International communications satellite
Communications satellite
2.6GHz
12GHz
21GHz
Satellite ISDB
Mobile reception
Database co.
Stadiums
Multimedia programming
Terrestrial ISDB
Electronic news co.
Ticket service
Video server
Weather forecast co.
Broadcasting station
Multimedia TV
Hi-Vision (HDTV)
TV Newspaper
Two-way cable ISDB

ISDB is designed to provide fresh and versatile broadcasting services. It will incorporate many different media, including satellite TV, HDTV, CATV, and the Internet, and it will integrate a variety of services.

① Multimedia-type TV with high-definition display

ISTV is an integrated services terminal with a high-definition TV display for the home, combining computer, video storage, with communication and other functions.

② Media fusion (TV for inter-media use)

ISTV can connect a large variety of media to enhance viewers' convenience. The idea is to make just one TV set the node of electronic-related media coming into the home.

THE GLOBAL NETWORK SOCIETY: BUSINESS OPPORTUNITIES AND CHALLENGES

New Applications in the Era of Convergence

Karl K Rossiter, Business Development Manager
Television New Zealand Ltd
Fax: + 64 6 753 2999   e-mail: kkr@tvnz.co.nz

TVNZ Distribution   June 1997

INTERACTION BY SATELLITE

This presentation is about

- The products of the digital revolution
- The potential of the digital infrastructure
- Commercial returns
- New clients and customer management

... through the application of new technology

TVNZ Distribution

INTERACTION BY SATELLITE

- Interactive multi-media communications
- Enhanced networking and interactivity
- Niche business and transactional services
- Selective electronic publishing
- Relevant distance education and health care
- Stimulating games and entertainment

TVNZ Distribution

THE INTERACTION INITIATIVE

Business Market	Residential Market
Electronic commerce Information, Publishing, Advertising and Marketing	Multi-choice Television - local & subscription driven
Finance, Banking, Trade, and Business services	Music, Games, Entertainment, Movies, Sport, News, Internet / WWW, Community information
Tele-commuting/conferencing Tele-medicine/veterinary Tele-maintenance...	Education and Healthcare
Training and upskilling	Shopping, Travel, Banking
	Directories and Advertising
	Betting and Gaming

TVNZ Distribution

100

THE INTERACTION INITIATIVE

The multimedia drivers ... for market attention

Color
Sound
Moving pictures
Graphics
Local language
Relevant content

TVNZ Distribution

THE INTERACTION INITIATIVE

The multimedia drivers ... for WWW growth

- Color, sound, pictures, movement, graphics
- Managed and refreshed content
- Interactivity and global participation
- Smart software and plenty of hype!

Despite concerns about security, commerce on the Web exceeded $US 500m last year

TVNZ Distribution

THE INTERACTION INITIATIVE

E-mail has become the Internet driver and is replacing fax.
(50% of international telecom traffic is fax
- worth $US 25 billion in 1996)

By the year 2000, Internet traffic is expected to exceed voice network traffic

- Intelsat May '97

TVNZ Distribution

THE INTERACTION INITIATIVE

By the year 2000, it is projected that
one million businesses will be on the Internet,
annual transactions will exceed $US 5 billion,
WWW will exceed 100 billion pages

It's only a very small step from the WWW to digital tv and multicasting which will enable the delivery of personalized information and premium content

TVNZ Distribution

- Microsoft May '97

THE INTERACTION INITIATIVE

Internet growth requires a doubling of bandwidth every three months

Multichannel / multimedia services exert similar bandwidth demands

The answer: Satellite capacity

... and the user is becoming swamped!

The answer: IBM's "Aglets"

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COMMUNICATION SATELLITES

Satellite capacity:

GEO Global: 172 in orbit / 81 on order
(3600 transponders / 2100 on order)

GEO Asia-Pacific: 67 in orbit / 28 on order

LEO/MEO: 300 satellites by the year 2000

Ka-band satellites: 920 satellite filings

... capacity to meet demand

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COMMUNICATION SATELLITES

Satellite capacity is ideal for multimedia

- Bypass clogged terrestrial networks
- Increase network reliability
- Provide appropriate bandwidth
- Suitable for interactivity
- Enable access to unreachable regions
- Rapid deployment

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COMMUNICATION SATELLITES

Satellite capacity is ideal for multimedia

- Challenging tradition and setting trends
- Undermining PSTN (Public Switched Telephone Network)
- Combining DTH and VSAT technologies (Direct to Home television and Very Small Aperture Terminals)
- Introducing the new two-way Personal Interactive Satellite Terminal

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COMMUNICATION SATELLITES

- GLOBAL
  Intelsat Intersputnik PanAmSat TDRSS
- REGIONAL
  Palapa B & Palapa C Asiasat Apstar JCSat
- NATIONAL
  JCSat Superbird N-Star Chinasat Insat Optus
  Thaicom Koreasat Measat

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COMMUNICATION SATELLITES

- GLOBAL
  Intelsat Intersputnik PanAmSat TDRSS
  Orion GE Americom
- REGIONAL
  Palapa B & Palapa C Asiasat Apstar JCSat
  Mabuhay Agila Superbird Insat M^{2}A ACeS
  L-Star AsiaSpace
- NATIONAL
  JCSat Superbird N-Star Chinasat Insat Optus
  Thaicom Koreasat Measat IndoStar

TVNZ Distribution

COMMUNICATION SATELLITES

Satellite capacity is ideal for multimedia

- Interactivity is highly functional
- Menu, remote, or command driven
- No slower than a terrestrial connection
- Compatible with the TCP/IP protocol
- Enables multi tasking participation
- Unlimited applications

TVNZ Distribution

COMMUNICATION SATELLITES

Satellite capacity is ideal for multimedia

- The multimedia industry is forcing an arranged marriage between the computer and the television set

... and the "computer tv" will emerge

... and again we will need IBM's "Aglets"

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THE INTERACTION INITIATIVE

Managing network information overload

- Where *"less"* is worth more
- Where *"selected"* is highly valuable

... enter the IBM Aglet

a well disciplined *"designer virus"*
that acts as your agent to track down
exactly the information you want

TVNZ Distribution

THE INTERACTION INITIATIVE

The new multichannel multimedia era:

- To / from homes, workplaces, institutions
- Using an interactive satellite terminal
  - Direct satellite reception → 45 Mb/s
  - Return path to satellite → ± 19.2 Kb/s
- Driven by menu &/or command

TVNZ Distribution

THE INTERACTION INITIATIVE

The new multichannel multimedia era:

- Initially an expensive *"premium"* option
- Return path transmits to a dedicated transponder capable of handling thousands of simultaneous responses
- Domestic low power satellite transmission equipment is not yet commercially available

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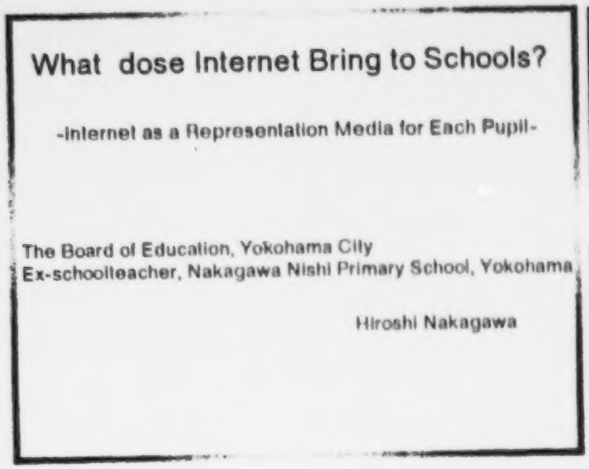
THE INTERACTION INITIATIVE

Achieving the interactive multimedia era:

- Japanese innovation
- Japanese enabling technologies
- Japanese production capability
- Japanese focus on consumer electronics

and therefore, interactive satellite multimedia becomes a global reality

TVNZ Distribution

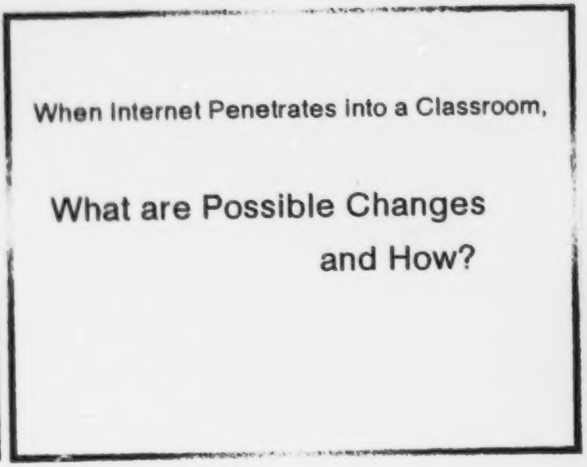


What dose Internet Bring to Schools?

-Internet as a Representation Media for Each Pupil-

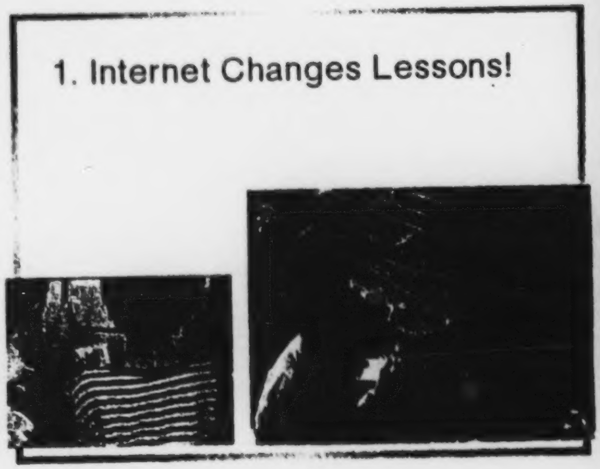
The Board of Education, Yokohama City
Ex-schoolteacher, Nakagawa Nishi Primary School, Yokohama

Hiroshi Nakagawa

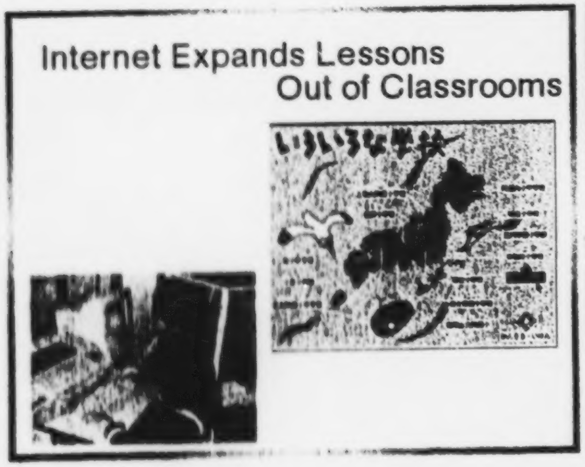


When Internet Penetrates into a Classroom,

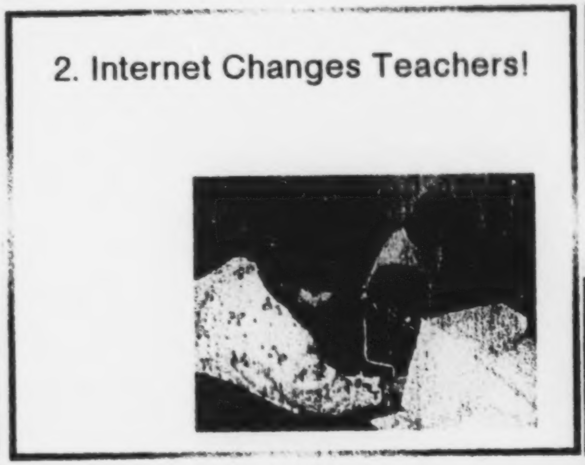
What are Possible Changes
and How?



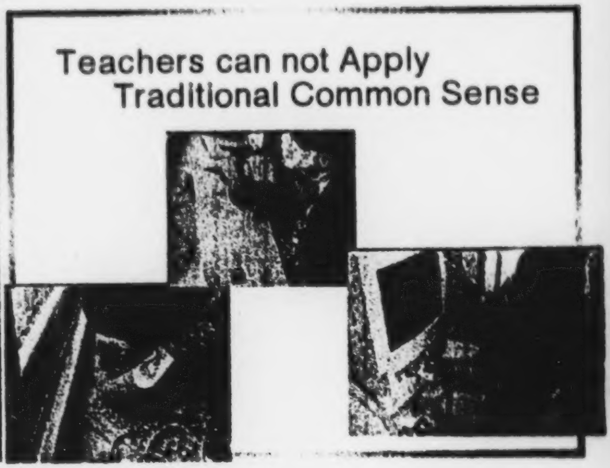
1. Internet Changes Lessons!



Internet Expands Lessons Out of Classrooms



2. Internet Changes Teachers!



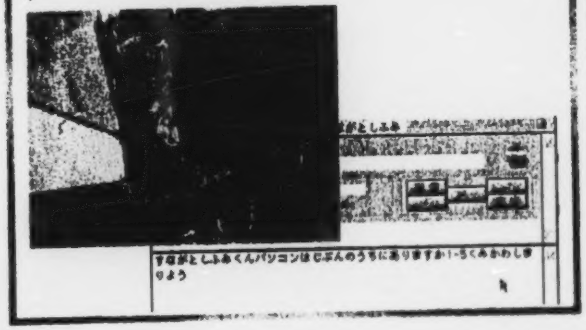
Teachers can not Apply Traditional Common Sense

Internet Changes Schools!

Internet Improves Communication between Parents and School

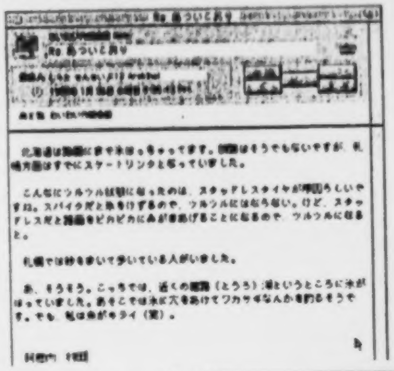
Internet Changes Children!

Communicate His or Her Message to Remote Friends by a Line of Sentence!

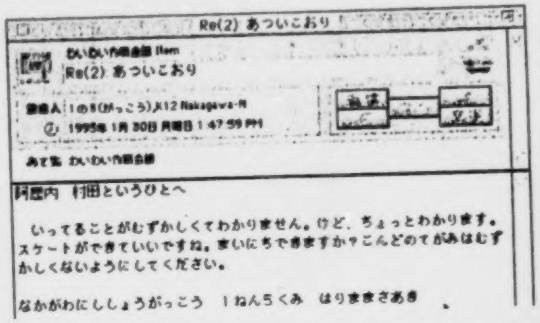


すながとしふみくんパソコンはじぶんのうちにありますか1-5くみかわしまりょう

A Mail from a Middle School Teacher



Request Mail Written by Hiragana



Re(2) あついこおり

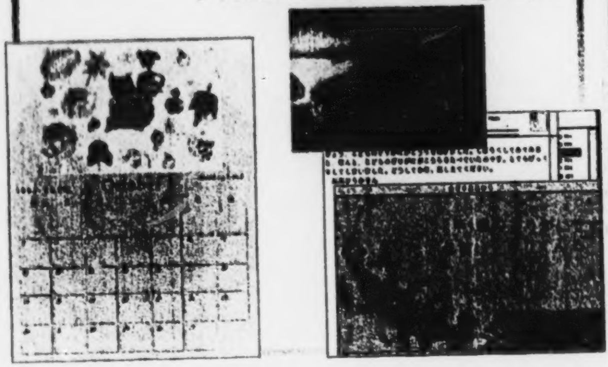
村田内　村田というひとへ

いってることがむずかしくてわかりません。けど、ちょっとわかります。スケートができていいですね。まいにちできますか？こんどのてがみはむずかしくないようにしてください。

なかがわにししょうがっこう　１ねん５くみ　はりままさあき

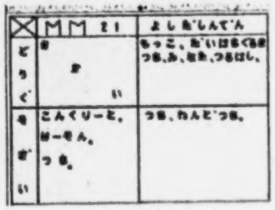
BEST COPY AVAILABLE

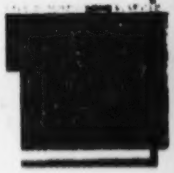
Communicate with Picture and Photograph



Works by First-grade Pupils

The Process to Know the Person He or Her Communicates to, Improve Him(or Her)self



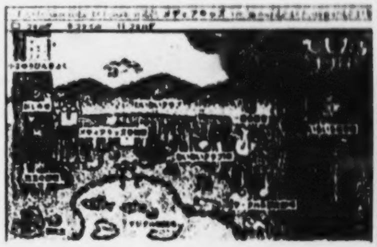


1) Environment that Schoolchildren can Use Internet Freely

-Local Control

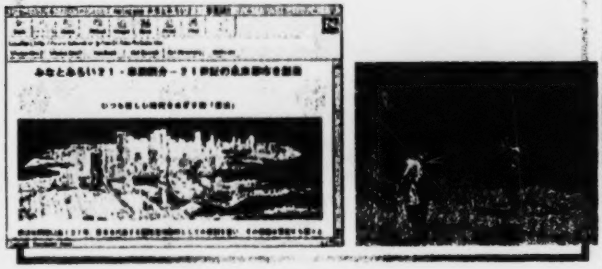
2) Schoolchildren are Interested in Internet through Word of Mouth Communication

3) Friendly Interface



めでぃあきっず

Actual Experiences are Key to Success



Network is One Team

Issues

1. Preparation for Network Infrastructure
2. Problems Regarding Support
3. Protection from Harmful Information

We Feel Warmth of People on the Other Side of Network

THE BUSINESS AND LAW
OF
WEB COMMERCE

Pacific Telecommunications Council
Mid-Year Seminar
Yokohama, Japan
June 4, 1997

Presented by
George E. Darby

Law Offices of George E. Darby
President, Teleport Asia

Voice: +1/808/626-1300 Fax: +1/808/626-1450
Email: darbylaw@teleport-asia.com

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This document and the presentation are not legal counsel.

THE BUSINESS AND LAW OF WEB COMMERCE

I. WHAT IS WEB COMMERCE?
  A. Electronic commerce
    1. The driving forces
      a) Globalization of markets and competition
      b) Supply chain management
      c) Networks and collaborative computing
    2. Electronic Document Interchange ("EDI")
      a) Over 300 EDI "transactions sets" exist
      b) A full-featured EDI payments transaction set exists, but is little used
    3. EDI implementations have been expensive, oriented toward mainframes and manufacturing companies, and not widely adopted Electronic commerce and its rapid evolution into Web Commerce
      (1) Three principal components of EDI
        (a) Translation software: mapping to and from transaction sets
        (b) Application interface software: moving transaction data into and out of company applications, esp. databases
        (c) Communications software: transmits and receives transactions sets over a network
      (2) EDI has been limited to registered trading partners and specialized networks
        (a) "Overkill" for text messaging, the major use of EDI
        (b) VAN-specific software
        (c) Uneconomic price/performance
  B. Computerized Reservations Systems
  C. Interactive Voice Response
  D. Television shopping
  E. Online (but not World Wide Web ("Web")) commerce
  F. Web-based commerce
    1. Business to consumer: replacement of the physical store
    2. Business to business: replacement of EDI, faxes, and voice calls
    3. What does "Web-based" mean?

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- a) Server computers on which Web pages are stored
- b) Client computers with Web page browsers
- c) A Web page uses bit-mapped pixels to present a graphical user interface to the end-user. A Web page is to the Internet as Windows is to DOS. The Web was invented in 1989 in Switzerland.
- d) Clients and servers are interconnected by the Internet
- e) Browsers cause servers to deliver Web pages for display on the browser
- f) Web pages can have static or interactive content
- g) Interactive content can be forms, searches, audio, video, etc.

4. A collection of Web pages on Web servers can be "virtual stores"
   - a) A collection of Web pages on a server is called a "Web site"
   - b) The first Web page in a Web site is the welcome page
   - c) Other Web pages in a Web store present products and services for sale
   - d) Information about products and services can be in "nested tiers" of pages with increasing detail and higher resolution pictures
   - e) Web customers can fill "virtual shopping carts," check out, and make secure payments
   - f) Virtual stores can be multi-lingual, and open 24 hours a day, year-round
   - g) Store owners can collect marketing data, comments, and other information from every store visitor or buyer
   - h) The Web customer base is generally well-educated and has financial credit

II. THE U.S. RETAIL MARKETPLACE IS APPROXIMATELY $2.3 TRILLION/YEAR

- A. U.S. direct marketing accounts for about $64 billion to $100 billion per year of total retailing, and is the fastest growing segment in retailing
  1. Direct marketing includes television shopping, mailed catalogs, and other direct mail
- B. Ninety-eight percent of U.S. households have TVs and 25% have PCs. The penetration of PCs will grow. More TVs will be Web-equipped as a standard feature.
- C. The U.S. Web Commerce market is estimated to be $133 billion dollars (15,2950,0000,0000 Yen) in the year 2000, most of which will be business-to-business sales. Gobal sales will be even greater.
- D. Web-equipped TVs are now available. The Web is becoming "interactive TV." (MSNBC, WebTV) Home shopping via Web-enabled TVs, kiosks, and PCs will explode since it is a transportation-free, threat-free environment, and can address major reasons people shop:
  1. Loneliness and boredom
  2. Education/career
  3. Necessities
  4. Hedonic (for pleasure)

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E. There are three main types of shoppers:
   1. Impulse. Impulse purchasing accounts for between 30% (overall average) to 50% (supermarkets) of all retail purchasing
   2. Patient. Web stores are always open and are infinitely patient.
   3. Analytic. Web pages can satisfy analytic shoppers' need for information, with minimal employee involvement.

F. There are four main types of purchases, all of which are very susceptible to "in-store influences" in the following order of increasing influence:
   1. Specifically planned (not easily influenced)
   2. Generally planned
   3. Reminder
   4. Unplanned (very easily influenced)

G. Successful Web Commerce satisfies the principal shopping criteria of:
   1. Convenience
   2. Control
   3. Low price
   4. Value
   5. Quality
   6. Uniqueness

H. The most successful Web Commerce sites meet the principal shopping criteria and reflect an upscale market
   1. http://www.amazon.com ("the best bookstore in the world")
   2. http://necxdirect.necx.com (computers and computer components)
   3. http://www.cdnow.com (compact disks - audio)
   4. http://www.internet.net (Internet Shopping Network, computers)

I. Web Commerce is in its infancy. Microsoft's first web commerce software, Merchant Server 1.0, shipped in late October, 1996. Web Commerce presents an unprecedented opportunity for remote vendors to reach global markets, regardless of the size of the vendor.

III. THE BASIC COMPONENTS OF A WEB COMMERCE SITE

A. Component 1: Full-time, high-speed access to the Internet Backbone
   1. The Internet Backbone is on the U.S. mainland, and still has "academic roots," but is now predominately commercial
      a) Virtual stores should be as close as possible (in terms of transmission time) to a major network access point. There are five major network access points, Santa Clara, Calif., (Metropolitan Area Exchanges-West ("MAE-West)), Washington, D.C. (MAE-East), PacTel-San Francisco (actually, in Fresno), Ameritech-Chicago, and Sprint-New York (actually in Pennsauken, NJ).
         (1) A "network access point" or "NAP" is where global service providers have peering arrangements for the exchange of Internet traffic. The major Internet global service providers are MCI (who also operates NSFNET), SprintLink,

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GTE/BBN Planet (who provides Backbone service to AT&T), ANS/AOL, and AGIS.

- (2) Most "peering" (exchange of email, Web page requests, Web pages, and other message types from users connected to one global service provider to servers connected to a different global service provider) is still done at the NAPs on the continental U.S., even for messages exchanged between two points in Asia

- b) A local Internet service provider may be many intermediaries removed from a NAP, and the available capacity may be oversold a hundred times. Very few Internet service providers will disclose how many times the total link to the relevant NAP has been oversold.
  - (1) The utility program "traceroute," when run from a non-modem connected PC, reports transmission delays.
- 2\. Less transmission delay between a virtual store and a NAP means faster response, which can mean fewer "abandoned shopping carts" at a Web store and, therefore, higher sales

B. Component 2: One or more Web and database servers running the following applications (examined in more detail below):
  - 1\. Catalogs with site maps, searching, and "pages on the fly"
  - 2\. Shopping cart with cookies, check-out, tax, and shipping
    - a) For export sales, customs forms and declarations
  - 3\. Secure payment
  - 4\. Inventory
  - 5\. Accounting, and
  - 6\. Post-sales support

C. Component 3: Web site operations
  - 1\. Ongoing order handling, accounting, customer service
  - 2\. Ongoing Web site design

D. Component 4: Web site maintenance and enhancement
  - 1\. Keeping Web site operational
    - a) Keeping operating system and software applications working
    - b) Installing software upgrades
    - c) Keeping public parts of Web site repaired
    - d) Keeping private parts of Web site private
    - e) Periodic link and HTML (the language of Web pages) validation
  - 2\. Implementing enhancements

E. Component 5: Optional multimedia extensions
  - 1\. Audio (clips or streaming)
  - 2\. Video (clips or streaming; video streaming requires at least 56 Kbps)
  - 3\. Use of new extensions prevents access by some older browsers

F. Component 6: Payment processing agreements for each payment mechanism
  - 1\. Credit card (e-card and perhaps physical)
  - 2\. Check (e-check and perhaps physical)

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3. E-cash

G. Component 7: Agreements for packaging and shipping products
  1. Web Commerce sites can have their own inventory (usually fast selling merchandise (e.g., http://www.virtualvineyards.com), or depend upon distributors' inventory (e.g., http://necxdirect.necx.com; NecxDirect depends upon live inventory and order connections to global distributors like Ingram Micro and Merisel)
  2. Major courier services, e.g., Fedex, will host Web Commerce sites and provide shipping

H. Component 8: Post-sales support
  1. Web-based bulletin boards (can require password)
  2. Frequently asked questions ("FAQ") database
  3. News services (a mini-USENET; can use the NNTP protocol used by USENET)
  4. Online diagnostics

I. Component 9: Self-hosting vs. third party hosting (physical and virtual)
  1. Self-hosting (your server on your premises with your Internet access)
  2. Third party hosting
    a) Physical (your server on a third party's premises with shared Internet access)
    b) Virtual (your Web site on a shared hard drive on a third party's premises with shared Internet access

IV. THE HEART OF WEB COMMERCE: WEB CATALOGS WITH A SITE MAP, SEARCHING, AND "PAGES ON THE FLY"

A. Design issues ("navigation, navigation, and navigation")
  1. Connection speed and Web server siting
  2. Welcome page and map of Web site
  3. Page templates
    a) Color scheme
    b) Static pages
      (1) What happens when prices or products change?
    c) Dynamic pages (requires gateway service and database servers)
      (1) Forms for accounts, surveys, feedback
      (2) Searching by product, manufacturer, function
        (a) Exact match
        (b) Loose match
        (c) Searching requires a "search engine," such as Excite, AltaVista, etc.
      (3) Page generation on the fly
        (a) Traditional "CGI" gateway services; each database interface is a new program instance
        (b) Newer "API" gateway services; all database interfaces are part of operating system
      (4) Page template selection based on customer type

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- (5) Voice over Internet (Microsoft NetMeeting, Netscape Communicator)
- d) Navigation buttons, menu bars, rulers, and cascading style sheets (new in Internet Explorer 3.0 and Navigator 4.0)
- e) Icon size and color depth (256 colors recommended)
- f) Progressive image display
- g) Clickable maps, icons, and headings
- h) Use of tables and frames
  - (1) "Tables" are like grid-lined tables in a word processing document, but are displayed in a Web browser. Tables help to organize tabular data. Tables within tables are possible.
  - (2) "Frames" are "mini-browsers" within the primary Web browser page. Frames are often used to continuously display a table of contents or index for a site in a portion of the browser page. A Web page can have multiple frames.
- i) Alternate "text only" pages (for non-graphical browsers)
- j) Multilingual issues, e.g., keeping text out of graphics, and building language-specific pages on the fly

4. Repurposing a Web catalog as a CD-ROM
5. Choice of Web page authoring tools
   - a) Some authoring tools, such as NetObjects Fusion, MS Interdev, and MS Front Page, include Web site management functions.
   - b) Other authoring tools, such as Navigator Gold, HotMetal, and Hot Dog, focus on Web page creation only.
   - c) "Conversion" authoring tools, like MS Internet Assistants for Word, Excel, for Office 95, or the integrated features in Office 97, "save" or "print" an existing document as a Web (HTML) file.
   - d) Like most computer graphics artists, most Web page designers and site managers use a collection of different software
6. Site map and/or table of contents (can be in a "frame")
7. Special search engine hit page (often the Welcome page, with major key words repeated in the same color as the background, and therefore invisible to humans; higher incidence of key word means higher relevance in most search engines)

V. SHOPPING CART WITH COOKIES, CHECK-OUT, TAX, AND SHIPPING

A. All catalog Web sites need shopping cart and check-out functions.

1. Some Web catalog creation software, e.g. ICat, Netscape Merchant System, and MS Merchant Server Catalog, come with shopping cart and check-out functions.
2. Shopping cart and check-out functions can be added to an existing Web sites. (www.ids.net/~oops/cart/ offers a free, basic, shopping cart and cookies system).
3. "Cookies" are small files on the end-user's computer that a Web server can read and write to. Cookies can be used for a variety of things, such as

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tracking where a Web site visitor goes during a visit to a Web site. A shopping cart system uses cookies (i) to store the products and quantities a shopper puts in a shopping cart, and (ii) to read the contents of the cookie at check-out time.

4. A shopping cart system should come equipped to calculate and display tax and shipping on orders.

VI. SECURE PAYMENT AND SECURE ACCESS

A. Credit card (e-card and perhaps physical)

1. "Do or die" agreement among Microsoft, Netscape, VISA, and MasterCard, who collectively co-developed and are implementing the new Secure Electronic Transaction ("SET") standard. SET uses public key/private key encryption and electronic certificates to emulate the use of physical credit cards.
2. How SET works
    a) Public key/private key encryption
    b) To authenticate sender to trading partners, sender uses sender's private key to encrypt messages
        (1) Recipient uses sender's public key to decrypt message: if the message decrypts, it can only have come from sender
    c) To shield financial or confidential information, sender uses recipient's public key to encrypt
        (1) Message can only be decrypted by recipient using recipient's private key
    d) Public keys are stored by publicly accessible "certificate authority services"
    e) SET-based orders have different parts encoded with different keys, so seller can decrypt a customer order encoded with seller's public key, and can decrypt authenticity of buyer encrypted with buyer's private key, but merchant cannot decrypt payment data encrypted with credit card issuer's public key; the merchant awaits the issuer's confirmation that payment will be made to the seller in a stated amount
    f) SET is more secure than physical use of credit cards
        (1) U.S. Government has now begun to grant "industrial strength" keys (56 bit DES or equivalent) for use in international commerce
        (2) VeriFone is shipping a comprehensive implementation of SET, which uses "vPOS" at the merchant site and "vGATE" at the acquirer and/or card issuer site. SET, vPOS, and vGATE is included in Microsoft Merchant Server 1.0 and will be included in Netscape Commerce Server Merchant System. In January, 1997, Wells Fargo Bank (California) and MasterCard implemented the first SET-based Web Commerce system.

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    3. Other credit systems (Open Market, First Virtual)
- B. Check (e-check and perhaps physical)
    - 1. E-check typically uses Kerberos private key encryption, which is well-established in the UNIX world
- C. E-cash
    - 1. Can be anonymous or identifiable
    - 2. Many vendors, e.g., DigiCash, CyberCash
    - 3. Operates like using a combination of travelers checks and cashiers checks. Consumer buys cash tokens (like travelers checks), which are used for online purchases by telling the bank that sold the cash tokens to issue payment (cashiers check) to a merchant.
    - 4. E-cash is well-suited for "micro-transactions", that is, small purchases from a few cents to a few dollars. Micro-transactions are important in buying information and in playing online games.
- D. The average direct cost of payment facilitation is:
    - 1. Cash, 8 cents per payment
    - 2. Debit card, 30 cents per payment
    - 3. Credit card, 80 cents per payment
    - 4. Credit card authorization is available on a fixed fee or fixed percentage basis from "third party processors" or "acquirers"
- E. Secure payment processing services may be provided on the store's Web server, by the hosting party's server, or by third parties specializing in payment services. AT&T Secure-Buy combines virtual hosting and payment services, but uses a proprietary payment system and network. Netcom and Fedex also offer hosting and payment processing services. First Virtual is a third party specializing in payment services.
- F. Security may also be important for "subscription" services
    - 1. Secure Sockets Layer ("SSL") uses encryption to protect all server / browser communications)
    - 2. Secure HTTP ("S-HTTP") uses encryption to protect only HTTP communications
    - 3. SSL and S-HTTP may be used together for double protection

VII. INVENTORY

- A. Interactive linkage to detect remaining units and out of stock conditions and to reorder when inventory is below carrying level
- B. Order tracking and inventory management reporting must be very carefully defined by required data and report frequency if hosting services are used.

VIII. ACCOUNTING

- A. Interactive linkage of transaction and payment system with general ledger or subledgers. Great Plains and Peachtree have announced such links.
- B. Sales reporting must be very carefully defined by required data and report frequency if hosting services are used.

IX. MARKETING

- A. Market segmentation

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B. Market research
  1. Web site visitor tracking programs ("server statistics")
  2. Surveys and questionnaires

C. Listings on major search sites (AltaVista, Yahoo, InfoSeek, etc.)
  1. Individual registrations
  2. Submit-it (www.submit-it.com)

D. Sales data analysis

E. Value-added sites
  1. Press release library
  2. Reference pages with links to other sites, esp. product or service evaluations and reviews
  3. Searchable reference works, e.g., membership lists, bibliographies
  4. Promotions, e.g., e-coupons, trade-ins, rebates
  5. Collateral information, e.g., recipes from a food store, walking tours from a travel agency

X. THE PRIVATE (PASSWORD PROTECTED) PORTION OF A MANUFACTURER'S OR MERCHANT'S WEB SITE

A. Enhanced security using the "Layer 2 Tunneling Protocol" – an "L2TP" private line "tunneled" through the Internet creates a Virtual Private Network, which can replace proprietary Value Added Networks
  1. Convergence: Major EDI VANs are have begun to offer Web site hosting and Web-based communications software to meet the challenge of Web Commerce software publishers, who are entering the EDI market through Extranet technology to meet the challenge of Web Commerce software publishers, who are entering the EDI market through Extranet technology

B. An "Extranet" is the enablement of commercial transactions among Intranets; an Extranet permits your suppliers and trading partners behind your exterior, "minor" firewall to check inventory, schedules, etc. (always have a second, major firewall if you use an Extranet)

C. Enhanced support of sales and marketing personnel and agents, globally: email, price lists, training, products in development, custom orders, product/market strategy, collaborative computing (including desktop videoconferencing)

XI. CASE STUDY: TRAVEL INDUSTRY WEB COMMERCE

A. Traditional approaches (e.g., www.travelocity.com, www.ten-io.com)

B. Web auction systems for travel (www.air-fare.com)

C. Business market enhancements
  1. Web catalog-based meeting planning
  2. Destination information systems for business travelers

D. Leisure market enhancements
  1. Web catalog-based FIT planning
  2. Web catalog-based GIT planning
  3. Destination information systems for leisure travelers

E. Tour wholesaling
  1. On-line, multimedia tariffs (tour packagers' catalogs of tours and prices)

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  - 2. Travel agents as tour packagers
- F. Ground service supplier reservation systems, esp. day tours, small properties, and shopping related travel
- G. Intranets and Extranets for travel industry companies

XII. NEAR-TERM WEB / INTERNET DEVELOPMENTS

- A. "Channel" or "Push" multicasting, e.g., Pointcast, BackWeb, MS Channel Definition Format. Channels can be used for automatic, global document or software distribution. Manufacturers can use Internet channels for remote diagnostics of equipment, to upgrade software installed on equipment, and to distribute "distance learning" materials.
- B. 56 Kbps (inbound) modems (conflicting standards have delayed adoption)
- C. Handheld Windows PCs with wireless Internet access
- D. Set-top boxes from cable television system operators
- E. Asynchronous digital subscriber lines from local exchange carriers
- F. Interoperation between the DCOM and CORBA methodologies for brokering objects over the Internet

XIII. FUTURE WEB / INTERNET DEVELOPMENTS

- A. Bandwidth reservation for voice and videoconferencing
- B. Replacement of TCP/IP over Frame Relay trunking by ATM over SONET/SDH, for even faster response times
  - 1. Higher resolution graphics, esp. 3D graphics and virtual reality (with multichannel audio)
  - 2. Interactive selling by videoconferencing, esp. video kiosks
  - 3. Faster catalog browsing
- C. Better predictive marketing based on buying habits
- D. Shopping agents, network-based programs that comparison shop and even negotiate terms and price
- E. Information agents, esp. information about product problems and maintenance requirements

XIV. THE CONTRACTUAL ENVIRONMENT OF WEB COMMERCE

- A. Web site design and development agreements
  - 1. Licenses of graphics and server software
  - 2. Assignments of custom software
- B. Web site hosting and maintenance agreements
- C. Intellectual Property Rights
  - 1. Ownership and use of software, trademarks, service marks, patents, etc.
  - 2. Ownership and use of marketing and technical data
- D. Payments processing agreements
- E. Extranet agreements
- F. Order fulfillment agreements (including warehousing, packaging, customs declarations and duties, shipment, and order tracking)
- G. Related "electronic distribution" agreements (technical support, remote diagnostics, software upgrade distribution)

XV. SUMMARY: USING WEB COMMERCE TO GAIN COMPETITIVE ADVANTAGE

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A. Reach global markets at historically low costs
B. Lower the cost of prospecting and lead development
C. Provide information based "selling tools" to enable a more effective sales force, collaboration among supply and trading partners, and sales of higher margin products
D. Reduce print and broadcast media advertising costs
E. Let the customer do more of the pre-sales work
F. Improve customer service and customer input into product development and trials
G. Leverage existing, or improve the Return on Investment of pending, investments in computers and Intranets
H. Enable "smart products" required to remain competitive

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INTERNATIONAL WEB COMMERCE
AND
INTELLECTUAL PROPERTY RIGHTS

George E. Darby
darbylaw@teleport-asia.com
Voice: +1/808/626-1300 Fax: +1/808/626-1450

If an exported product or service is based on a particular technology, method, or design, or if a brand name is used to identify an exported product or service, an Intellectual Property Rights plan should be part of the overall export strategy. Intellectual Property Rights are the rights granted under patent, trademark, copyright, and trade secret law. These rights are not uniform in all countries, and there have been significant changes in Intellectual Property Rights under the Trade Related Aspects of Intellectual Property Rights Objectives ("TRIPS") portion of the GATT Uruguay Round Agreement. As of January 1, 1996, GATT became the World Trade Organization ("WTO"). WTO/TRIPS covers standards of: protection for patents, trademarks, copyrights, and trade secrets; enforcement of Intellectual Property Rights; and dispute settlement procedures. This is a brief summary of International Trade and Intellectual Property Rights, and legal counsel should be obtained for assistance with specific matters.

A **patent** is a grant of certain "monopoly rights" by a government to an inventor. The inventor may assign his or her patent to another owner. A patent owner has the right to exclude others from making, using, and selling the patented invention for a set period of time. In the United States, patents are valid for 20 years from the filing date of the patent application. Patents are granted in the U.S. for machines, compositions of matter, articles of manufacture, methods, and improvements thereon, that are novel (new), useful, and unobvious. Describing an invention in a publication, offering the invention for sale, or putting the invention into public use more than one year before the filing date of the relevant patent application can bar the issuance of a patent for the invention. Patents are issued on a country by country basis, and U.S patents are not automatically recognized and protected in foreign countries. International treaties and conventions help to simplify the filing of related patent applications in multiple countries. WTO/TRIPS resolved long-standing international issues surrounding patent rights, including recognition of protection for pharmaceutical and agricultural chemical patents, and prohibition of compulsory licensing regimes that apply to only certain fields of technology.

A **trademark** is a word, phrase, symbol or design that identifies and distinguishes the source of the goods or services of one party from those of other parties. A service mark identifies and distinguishes the source of a service rather than a product. Trademark and service marks (collectively, "marks") can be registered under state and U.S federal law, and under the laws of many foreign countries, but not all nations provide statutory protection of marks. Marks can be registered in many countries without actual use of the mark, so your export strategy can include securing registration in the U.S. and foreign nations of planned marks before launching the use of such marks. WTO/TRIPS introduced important improvements in the international protection and

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use of marks, such as enhancing the protection of well-known marks, and prohibiting the compulsory licensing of marks.

A **copyright** protects an original work of authorship (the expression of an idea, but not the idea itself) from the moment the work is "fixed in a tangible medium of expression." A copyright grants to the author control over the copying, sale/distribution, derivative use, public performance, and public display of the work. A copyright can protect computer programs, documentation, architectural works, audiovisual works, and many other works of authorship important in international trade. Works created in the U.S. on or after January 1, 1978, are automatically protected by a U.S. copyright from the moment of creation. The country of first publication of a work is important in determining its copyright status.

A **trade secret** is "any formula, pattern, device, or compilation of information which is used in one's business, and which gives opportunity to obtain an advantage over competitors who do not know or use it." Unlike patents, copyrights, and trademarks, the protection of trade secrets relies on company contracts and internal policies, not on registration of the trade secrets with a government agency. Once a trade secret becomes public, it loses forever its status as a trade secret. "Technology transfer" is often a component of capital goods exports, and usually includes the disclosure of trade secrets to the importing customer. Although there are substantial penalties for misappropriation of trade secrets under U.S. federal and state laws, protection of trade secrets in other countries can be very weak. Protection of trade secrets in international trade, therefore, relies on the creation and enforcement of corporate security policies, and on confidentiality clauses in consulting, licensing, employment, marketing, and joint venture agreements. WTO/TRIPS requires that persons to whom trade secrets are properly disclosed abide by "honest commercial practices"; protection of trade secrets by contractual provisions remains very important international trade.

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GEORGE E. DARBY
darbylaw@teleport-asia.com
Voice: +1/808/626-1300 Fax: +1/808/626-1450

Mr. Darby practices technology law, the provision of legal counsel to technology businesses. His legal practice includes software development, telecommunications, and computer services agreements; financing; protection of intellectual property; joint ventures; licensing; and leasing. Mr. Darby is also of counsel to a patent, trademark, and technology law firm in Greenville, S.C., and is president of an information systems consultancy that provides strategic planning concerning information technology, Web commerce, business process redesign, intellectual property, and marketing in Asia.

Mr. Darby has produced several pioneering technology events as part of PTC activities, such as the first ever fully interactive three-node digital international videoconference (Hong Kong, Honolulu, and Washington, D.C.) in 1987, and the first ever use over VSAT (a thin-route satellite communications technology) of interactive multimedia databases, airline reservations systems, and desktop videoconferencing in 1994.

Education:
J.D., Richardson School of Law, University of Hawaii at Manoa
M.B.A., Finance Concentration, University of Hawaii at Manoa
Post-graduate Certificate, International Banking and Finance
Post-graduate Certificate, International Marketing Management
Graduate Study, Harvard University
B.A., (Molecular) Biology/Pre-Med, Johns Hopkins University

Languages: Japanese, German, French

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Towards the New Age of Digital Economy

- Development of Electronic Commerce and
A Policy Framework -

June 4th, 1997

Hisashi YOSHIKAWA
Machinery & Information Industries Bureau
Ministry of International Trade & Industry, Japan

2 Change in Japanese economy through EC

The Key to economic reform is Electronic Commerce - the economic activity and daily living through the exchange of digital information using IT and networks.

1. The achievement of economic structural reform
2. The increase in employment through the creation of new industrial fields

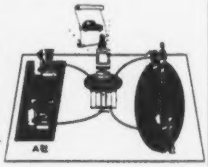
3 Types of Electronic Commerce

Electronic Commerce

- electronic exchange of data and information among corporations
  ➡ EDI, CALS etc
- electronic commercial transaction between companies and consumers
  ➡ Virtual malls, IC cards etc

4 Example: Automotive Industry

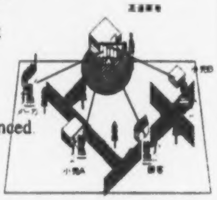
- Design and other data can be exchanged on computer networks (e.g. collaborative design).
- Operations can be undertaken at various locations simultaneously.



- Changes in corporate relationships such as between parent companies and supporting SMEs.
- Elimination of limitation imposed by company location

5 Example: Textile and distribution industries

- Unified real-time management of sales and customer data
- Inventory risk lowered, efficiency of distribution enhanced



- reduced stock time by 35%
- reduced the rate of overstocking from 12% to 5%

6 Prospective Electronic Commerce Market

Business to consumer EC market in the world

	1994	2000	2005
all retail sales	2.4	4.3	6.5
online sales	0	0.6	1.65
rates of online sales	0%	14%	19.2%

(unit : trillion $)

(source: Killen & Associate, Inc.)

In Japan, rates of online sales is expected to grow to approximately 5% in the year 2005, and EC market will increase to about $10 billion.

MITI's Measures for Promoting Electronic Commerce and A Policy Framework

8 MITI pilot projects in electronic commerce

Support for R&D projects since fiscal 1995

- Business to business electronic commerce
  - CALS-related
  - EDI-related
  - other projects
- Business to consumers electronic commerce
- R&D of technological platform for electronic commerce
- Promotion and training for electronic commerce, particularly for SMEs

9 Business to business EC (1)

Data interchange of blueprints etc. in design, production, and other processes/Joint projects (CALS-related)

- Electric power
- Automobiles
- Space: Satellite construction
- Steel
- Construction (in collaboration with Ministry of Construction)
- Aircraft (in collaboration with Defense Agency)
- Electronic equipment & components
- Plant
- Software
- Shipbuilding (in collaboration with Ministry of Transport)

10 Business to business EC (2)

Projects involving building of common data bases and advanced data-interchange (EDI-related)

- Petrochemicals
- Textiles
- Toys
- Travel (in collaboration with Ministry of Transport)
- Distribution
- Electric cables
- Stationery
- Construction materials (in collaboration with Ministry of Construction)
- Furniture
- Medical care (in collaboration with Ministry of Health and Welfare)
- Publishing
- Advertising

11 Business to consumer EC, and other projects

EC projects between companies and consumers
- Credit, distribution sectors, etc.
(Total of 19 projects)

Other projects
- Electronic notarization
- Study of business processes

12 Electronic Commerce Promotion Council of Japan (ECOM)

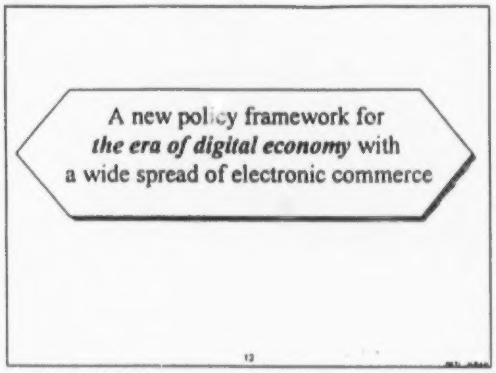
ECom

Objective:

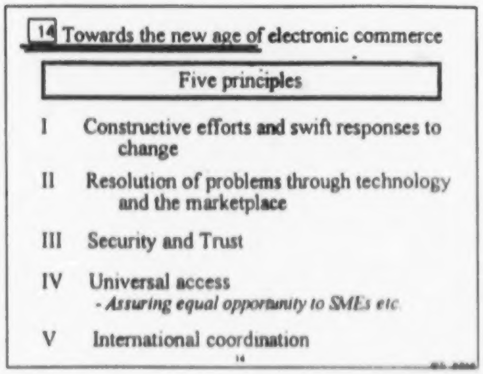
To form a technological and institutional common platform for electronic commerce

Member :

229 Companies/Organizations
including foreign affiliates (as of 1996.12.10)



A new policy framework for
the era of digital economy with
a wide spread of electronic commerce



14 Towards the new age of electronic commerce

Five principles

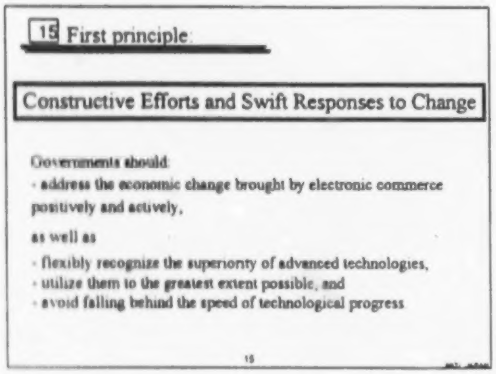
I Constructive efforts and swift responses to change

II Resolution of problems through technology and the marketplace

III Security and Trust

IV Universal access
- *Assuring equal opportunity to SMEs etc.*

V International coordination

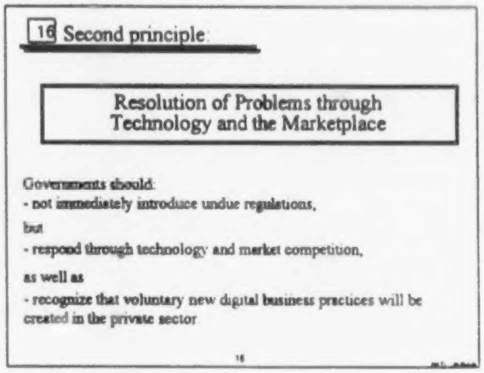


15 First principle:

Constructive Efforts and Swift Responses to Change

Governments should:
- address the economic change brought by electronic commerce positively and actively,

as well as
- flexibly recognize the superiority of advanced technologies,
- utilize them to the greatest extent possible, and
- avoid falling behind the speed of technological progress



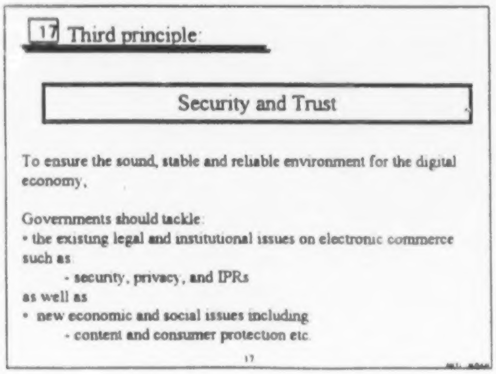
16 Second principle:

Resolution of Problems through Technology and the Marketplace

Governments should:
- not immediately introduce undue regulations,

but
- respond through technology and market competition,

as well as
- recognize that voluntary new digital business practices will be created in the private sector



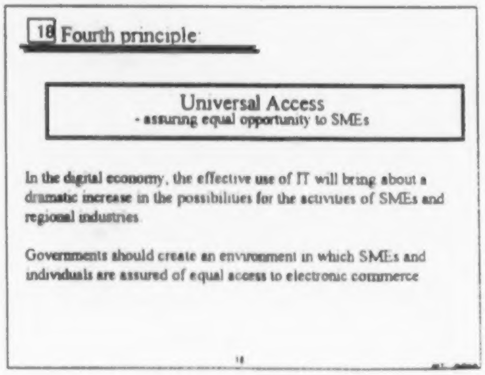
17 Third principle:

Security and Trust

To ensure the sound, stable and reliable environment for the digital economy,

Governments should tackle:
- the existing legal and institutional issues on electronic commerce such as
    - security, privacy, and IPRs

as well as
- new economic and social issues including
    - content and consumer protection etc.



18 Fourth principle:

Universal Access
- assuring equal opportunity to SMEs

In the digital economy, the effective use of IT will bring about a dramatic increase in the possibilities for the activities of SMEs and regional industries.

Governments should create an environment in which SMEs and individuals are assured of equal access to electronic commerce

19 Fifth principle:

International Coordination

Governments should:

- recognize the global nature of the digital economy, and

- make an efforts to ensure close information exchanges and policy coordination with other countries

20 Towards the new age of electronic commerce

Policy issues

- Building an international framework
- Formulating rules for commercial transactions
- Creating a new system for protecting IPRs
- Ensuring security
- Protecting personal data and privacy
- Dealing with illegal and harmful content

21 Towards the new age of electronic commerce

Policy issues (continued)

- Addressing consumer-related issues
- Supporting the efforts of SMEs
- Nurturing and educating human resources
- Assuring interoperability
- Addressing other institutional issues
  - *financial issues, tax and customs issues etc*

22 Conclusion

MITI made public a draft report on a comprehensive policy framework for electronic commerce incorporating policy principle, issues to be achieved, and invite public comments.

A draft report,
" ***Towards the Age of Digital Economy*** "
which was issued in May 1st, 1997

Please refer to the Web page at **http://www.miti.go.jp**

Pacific
Telecommunications
Council

PTC 1997
Mid Year Seminar

June 2-4, 1997 Yokohama, Japan

クローバル・ネットワーク・ソサエティ：事業機会と挑戦
Global Network Society : Business Opportunities and Challenges

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情報通信月間参加行事
主催：PTC日本委員会、PTC
後援：郵政省、通商産業省、横浜市、日本経済新聞社
協賛：情報通信月間推進協議会、(財)[illegible]コミュニケーション[illegible]

The event for INFO-COMMUNICATIONS PROMOTION month
Hosted by : PTC Japan Committee, PTC
Supported by : Ministry of Posts and Telecommunications, Ministry of International Trade and Industry,
NIHON KEIZAI SHIMBUN, Inc.
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PTC 1997 年央セミナープログラム
“グローバル・ネットワーク・ソサエティ：事業機会と挑戦”

	6/2（月）	6/3（火）		6/4（水）	
9：00			9：00～18：00 セミナー受付	9：30～12：30 セッション2 “プラットフォームと関連機器” 司会：鶴田 清治 PTC 名誉会長 ●吉川 英一 NEC 常務取締役 ○マルチメディアネットワークのプラットフォームと関連機器及びその応用 ●持田 侑宏 富士通研究所 取締役 ○アクセスネットワークにおけるプラットフォームと関連機器 ●吉川 重夫 NHK放送技術研究所 研究主幹 ○将来の家庭用大型平面ディスプレイ 11：00～11：15 休憩 ●沢田 智明 日本IBM ネットワークコンピューティング事業推進NC計画 部長 ネットワークコンピューティング・プラットフォーム ●安達 徹 NTT通信網総合研究所 主幹研究員 マルチメディア時代のネットワークサービス 小ホール（5F）	9：00～14：00 セミナー受付
10：00		10：00～10：45 開会の辞 司会：横川 日榕 PTC 副理事長 小山 森也 PTC 日本委員会 委員長 野田 聖子 郵政政務次官 高秀 秀信 横浜市長 ジェーン・ハード PTC 理事長 10：45～12：00 基調講演 司会：小関 康雄 PTC 名誉会長 ●長谷川 憲正 郵政省 大臣官房国際部長 ○グローバル情報社会の発展と政策 ●アンソニー・ルトコウスキー ジェネラル・マジック 副社長 グローバル通信ネットワークの将来 小ホール（5F）			
11：00					
12：00		12：00～13：30 昼食 パシフィック（3F）		12：30～14：00 昼食 パシフィック（3F）	
13：00		13：30～17：00 セッション1 “電気通信インフラストラクチャー” 司会：公文 俊平 GLOCOM 所長 ●宮脇 陞 NTT 副社長 NTTの国際事業戦略 ●太田 亨 KDD 副社長 アジア太平洋地域を中心としたKDDビジネスの将来戦略 ●趙 禎来 SKテレコム 副社長 韓国における無線通信：自由競争時代の新戦略 15：00～15：15 休憩 ●リー・ダニエルス 日本AT&T 社長 ○米国におけるユーザーの要望と産業界の対応 ●永目 賢助 トヨタ自動車 システム企画部副部長 ○通信事業者に対する要望 ●西脇 文男 日本興業銀行 システム管理部長 ○バンキング・ネットワーク・システムの動向と情報通信事業者への期待 小ホール（5F）			
14：00	14：00～18：00 セミナー受付			14：00～17：30 セッション3 “コンテンツとアプリケーション” 司会：小高 康邦 PTC 名誉会長 ●長屋 龍人 NHK放送文化研究所 研究主幹 デジタル放送時代におけるISTV（Integrated Services TV） ●カール・ロシータ テレビジョン・ニュージーランド 融合時代の新アプリケーション ●中川 一史 横浜市 教育委員会事務局情報教育課 ○マルチメディア教育 15：30～16：00 休憩 ●ジョージ・ダービー ジョージ・ダービー法律事務所 ○ウェブコマース・ビジネスと法的課題 ●芳川 恒志 通産省 機械情報産業局情報政策企画室長 ○デジタル経済の時代に向けて ●安藤 隆年 ソフトピアジャパン 副理事長 ○岐阜県ソフトピア・プロジェクト 17：35～17：45 閉会の辞 司会：横川 日榕 PTC 副理事長 ●ダン・ウェドマイヤー PTC 副理事長 小ホール（5F）	
15：00					
16：00					
17：00					
18：00	18：00～20：30 PTC日本委員会主催 オープニング・パーティー パシフィック（3F）	18：00～20：00 横浜市長 歓迎レセプション 501・502（5F）			
19：00					

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PTC 1997 Mid Year Seminar Program

"Global Network Society : Business Opportunities and Challenges"

6/2 (MON)

14 : 00~18 : 00 Seminar registration

18:00~20:30
Opening reception hosted by PTC Japan Committee

6/3 (TUE)

9 : 00~18 : 00 Seminar registration

10 : 00~10 : 45
Opening Remarks
chaired by Hiyoshi Yokogawa,
Vice President of PTC

- Moriya Koyama
  Chairman, PTC Japan Committee
- Seiko Noda
  State Secretary for MPT
- Hidenobu Takahide
  The Mayor of Yokohama
- Jane N. Hurd
  President of PTC

10 : 45~12 : 00
Keynote Speeches
chaired by Yasuo Koseki,
Chairman Emeritus of PTC

- Norimasa Hasegawa
  Director-General, International Affairs Department, MPT
  Development and policy for global information society
- Anthony Rutkowski
  Vice President, General Magic
  Future global communications network

Small Auditorium 5F

12 : 00~13 : 30 Lunch

Pacific 3F

13 : 30~17 : 00
Session 1
"Telecommunications Infrastructure"
chaired by Shumpei Kumon,
Executive Director, GLOCOM

- Noboru Miyawaki
  Senior Executive Vice President, NTT
  NTT's overseas business strategy
- Tohru Ohta
  Executive Vice President, KDD
  KDD's Future strategy, clicking on the Asia-Pacific region
- Jung L. Mok
  Senior Executive Vice President, SK Telecom
  Wireless communication in Korea - the new strategy under competition and open-door policy

15 : 00~15 : 15 Break

- Lee A. Daniels
  President and CEO, AT&T Japan
  US user requirements and industry implications
- Kensuke Nagame
  TOYOTA
  Requirements of telecom carriers
- Fumio Nishiwaki
  General Mgr., Systems Department, IBJ
  Banking network systems and expectations to telecom carriers

Small Auditorium (5F)

18 : 00~20 : 00
Welcome reception hosted by the Mayor of Yokohama City

501·502 (5F)

6/4 (WED)

9 : 00~14 : 00 Seminar registration

9 : 30~12 : 30
Session 2
"Platform and Equipment"
chaired by Kiyoharu Tsuruta,
Chairman Emeritus of PTC

- Eiichi Yoshikawa
  Senior Vice President, NEC
  Platform and equipment for multi-media network and its applications
- Yukou Mochida
  Member of the Board
  Fujitsu Laboratories
  Platform and equipment for access network
- Shigeo Yoshikawa
  Exec. Research Engineer, Science & Technical Research Lab, NHK
  Future large - area flat panel display for house use

11 : 00~11 : 15 Break

- Tomoaki Sawada
  Director, Strategy and Plan, Network Computing, IBM Japan
  Network computing platform
- Toru Adachi
  Director, Telecommunication Network Lab, NTT
  Network services in multimedia era

Small Auditorium 5F

12 : 30~14 : 00 Lunch

Pacific 3F

14 : 00~17 : 30
Session 3
"Contents and Applications"
chaired by Yasukuni Kotaka,
Chairman Emeritus of PTC

- Tatsuhito Nagaya
  Exec. Researcher, Broadcasting Culture Research Inst., NHK
  ISTV will open a variety of contents and applications in digital broadcasting
- Karl Rossiter
  Television New Zealand
  New applications in convergence era
- Hitoshi Nakagawa
  City of Yokohama
  Multimedia education

15 : 30~16 : 00 Break

- George E. Darby
  Law offices of George E. Darby
  Business and law of web commerce
- Hisashi Yoshikawa
  Director, MITI
  Towards the new age of digital economy —Development of electronic commerce and a policy framework—
- Takatoshi Ando
  Vice Chairman, Softopia Japan
  Softopia project of Gifu prefecture

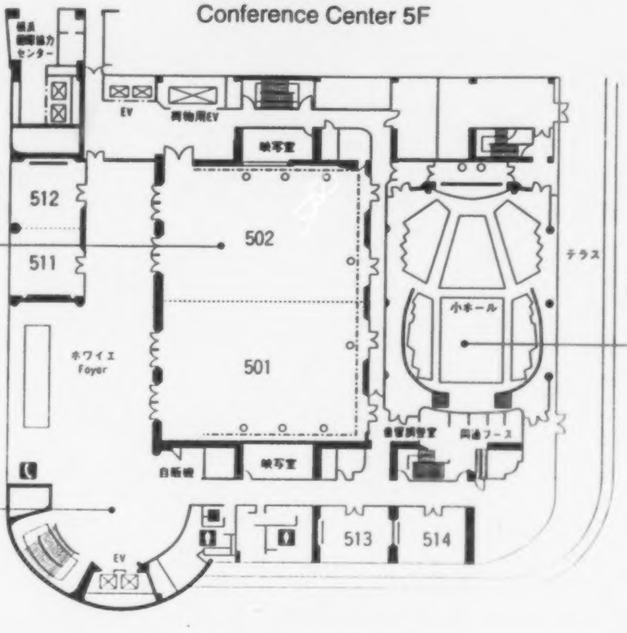
17 : 35~17 : 45
Closing Remarks
chaired by Hiyoshi Yokogawa,
Vice President of PTC

- Dan Wedemeyer
  Vice President of PTC

Small Auditorium (5F)

会場案内図
Floor Plan

会議センター　5F
Conference Center 5F

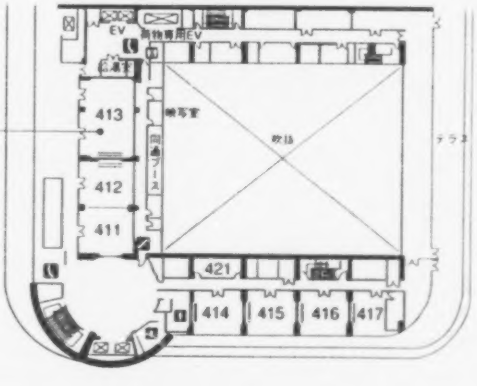

横浜国際協力センター
EV
荷物用EV
映写室
512
511
502
501
ホワイエ
Foyer
小ホール
音響調整室
同通ブース
自販機
映写室
EV
513
514
テラス

横浜市長歓迎レセプション（6/3）
Welcome reception hosted by the Mayor of Yokohama City (6/3)

「小ホール」セミナー（6/3,4）
Seminar at Small Auditorium (6/3,4)

受付
Registration Desk

会議センター　4F
Conference Center 4F


EV
荷物専用EV
映写室
同通ブース
吹抜
テラス
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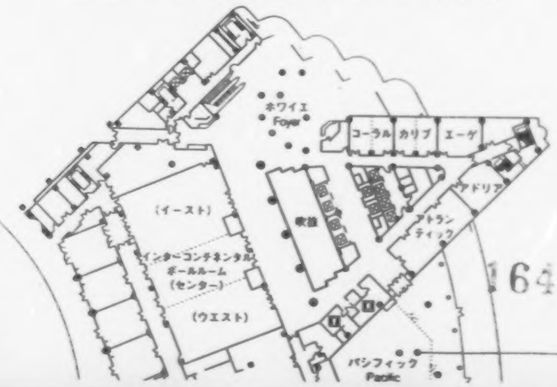
事務局
Secretariat
TEL 045-223-6189

ヨコハマグランド・インターコンチネンタルホテル　3F
Yokohama Grand・Intercontinental Hotel 3F


ホワイエ
Foyer
コーラル
カリブ
エーゲ
アドリア
アトランティック
吹抜
（イースト）
インターコンチネンタルボールルーム（センター）
（ウエスト）
パシフィック
Pacific

昼食（6/3,4）
LUNCH (6/3,4)

PTC日本委員会主催
オープニング・パーティー（6/2）
Opening reception hosted by PTC Japan Committee (6/2)

PTC 1997 Mid Year Seminar Hosting Members

PTC Japan Committee

Ministry of Posts & Telecommunications

Ministry of International Trade and Industry

Itochu Corporation
Oki Electric Industry Co., Ltd.
KDD SubmarineCable Systems Inc.
Kokusai Electric Co., Ltd.
Kokusai Denshin Denwa Co., Ltd.
Research Institute of Telecommunications Policies & Economies
Sumitomo Corporation
Sumitomo Electric Industries, Ltd.
Secom Co., Ltd.
DDI Corporation
Toshiba Corporation
IBM Japan, Ltd.
Japan Satellite Systems Inc.
Japan Marine Technology, Ltd.
Japan Telecom Co., Ltd.
NEC Corporation
Nippon Telegraph and Telephone Corporation
Japan Radio Co., Ltd.
Hitachi, Ltd.
Fujitsu Limited
The Furukawa Electric Co., Ltd.
Matsushita Communication Industrial Co., Ltd.
Mitsubishi Corporation
Mitsubishi Electric Corporation
Yazaki Corporation
(25 Companies)

Japan Telecommunications Engineering & Consulting Service
KDD Engineering & Consulting Inc.
Japan Telecommunication Industry Federation
Japan Approval Institute for Telecommunication Equipment
NHK (Japan Broadcasting Corporation)
Institute for Future Technology
Research Institute of Telecommunication and Economic, Japan
(7 Institutes)

Yasukuni Kotaka
Kenji Saga
Yukiyasu Suguri
Nozomu Takasaki
Kiyoharu Tsuruta
Yasuo Makino
Hiyoshi Yokogawa
Osamu Hayama
Shoji Watanabe
(9 Individual Members)

ＰＴＣ１９９７年央セミナー・ホスト・メンバー
ＰＴＣ日本委員会

郵政省

伊藤忠株式会社
沖電気工業株式会社
ＫＤＤ海底ケーブルシステム株式会社
国際電気株式会社
国際電信電話株式会社
株式会社情報通信総合研究所
住友商事株式会社
住友電気工業株式会社
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第二電電株式会社
株式会社東芝
日本アイ・ビー・エム株式会社
株式会社日本サテライトシステムズ
日本太洋海底電線株式会社
日本テレコム株式会社
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三菱商事株式会社
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矢崎総業株式会社
（２５社）

通商産業省

財団法人　海外通信放送コンサルティング協力
財団法人　ＫＤＤエンジニアリング＆コンサルティング
電気通信産業連盟
財団法人　電気通信端末機器審査協会
日本放送協会
財団法人　未来工学研究所
財団法人　国際通信経済研究所
（７法人）

小高　康邦
佐賀　健二
村主　行康
高崎　望
鶴田　清治
牧野　康夫
横川　日榕
早馬　修
渡邊　昭治
（９個人会員）

PTC1997 Mid Year Seminar June 2-4 1997 Attendees List

Yasuo Makino		Tel 03-3918-0800	Fax 03-3918-2222	1-22-10,Kitaohtsuka,Toshima-ku,Tokyo170 E-mail
Kenji Sugawara	Professor	Tel 0474-78-0539	Fax 0474-78-0549	2-17-1,Tsudanuma,Narashino-shi,Chiba275 E-mail suga@suga.cs.it-chba.ac.jp
Mr. Roger Severence		Tel	Fax	E-mail
Kiyoshi Matsuhashi	ALPS Electric Co.,Ltd. Engineering Management Dept.	Tel 045-531-4161	Fax 045-542-5226	1767,Shinwa-cho,Kouhoku-ku,Yokohama,kanagawa223 E-mail matuhasi@alps.co.jp
John B Kelley,Jr.	Andersen Consulting Managing Partner Communications Industry Asia/Pacific	Tel 03-3796-4006	Fax 03-3423-2544	7-1-16,Akasaka,Minato-ku,Tokyo107 E-mail John.B.Kelley@ac.com
Mr. John B. Kelley	Andersen Consulting Mng Prtr Comm Ind Grp Asia/P	Tel 81-3-3796-4006	Fax 81-3-3423-2544	Nihon Seimei Akasaka Daini Bldg, 7-1-16 Akasaka Minato-ku, Tokyo 107 Japan E-mail
ee A. Daniels	AT&T Japan President and CEO	Tel	Fax	E-mail
Mr. Craig Vielguth	Bellcore Exec Director-Int'l Markets	Tel	Fax	Piscataway, NJ USA E-mail
Koichiro Shinohara	BHN Basic Association Executive Secretary	Tel 03-5269-2221	Fax 03-5269-2223	2-6-5 Shinjuku Shinjuku-ku Tokyo 160 E-mail
Tatsuhito Nagaya	Broadcasting Culture Research Inst., NHK Exec. Researcher, Broadcasting Culture Research inst.	Tel	Fax	E-mail
Mr. Yuji Ito	BT Japan Strategy & Business Planning Manager	Tel	Fax	Tokyo, Japan E-mail
Mr. Koshiro Kitazato	BT Japan Chairman & Representative Director	Tel	Fax	Tokyo Japan E-mail
Mr. Cheng-Chang	Chunghwa Telecom Co., Ltd. Senior Vice President	Tel 886-2-3443605	Fax 886-2-3932535	31 Ai-Kuo East Road Taipei 106 Taiwan ROC E-mail
Hitoshi Nakagawa	City of Yokohama	Tel 045-671-4169	Fax 045-680-5138	1-1-7kai, Bandaimachi, Naka-ku, Yokohama-shi, Kanagawa 231 E-mail
oshikazu Tanida	Communications Industry Association of Japan Director, Strategic Affairs	Tel 03-3231-8755	Fax 03-3231-3110	1-7-2,Otemachi,Chiyoda-ku,Tokyo100 E-mail tanida@ciaj.or.jp
Mr. Gonzalo De Dios	Coudert Brothers Associate Attorney	Tel 202-775-5100	Fax 202-775-1168	1627 I Street NW Ste. 1200 Washington D.C., 20006 USA E-mail dediosg@dco.com
Yasuhiro Nakata	DDI Corporation	Tel 03-3221-9521	Fax 03-3221-9400	8,Ichiban-cho,Chiyoda-ku,Tokyo102 E-mail
Michio Kudo	DDI Corporation Senior Manager	Tel 03-3221-9437	Fax 03-3221-8044	8,Ichiban-cho,Chiyoda-ku,Tokyo102 E-mail
Masaaki Morita	Deutsche Telekom K.K. Sales Director	Tel 03-5213-8642	Fax 03-5213-8632	29-1,Ichiban-cho,Chiyoda-ku,Tokyo102 E-mail
ohan Reyneke	Director,Asia Pacific Telecom Wordwide Telecommunications Unisys Australia Limited	Tel +61-2-9390-1171	Fax +61-2-9390-1234	115Wicks Road North Ryde 2113 E-mail JohanReyneke@unn.unisys.com
Mr. Tien-Lai Teng	Directorate General of Telecomm Deputy Director General	Tel 886-2-343-3957	Fax 886-2-343-3956	16 Chi Nan Rd. Sec. 2 Taipei, Taiwan ROC E-mail
Mr. Chung-Ming	Directorate General of Telecommunications Section Director	Tel 886-2-343-3620	Fax 886-2-343-3600	1F, 16 Chi-nan Rd. Sec. 2 Taipei, 100 Taiwan ROC E-mail

PTC1997 Mid Year Seminar June 2-4 1997 Attendees List

Yujiro Eguchi	Faculty of Business Administration Soka University Dean, Professor	Tel 0426-91-2211	Fax 0426-91-9387	1-236 Tangimachi Hachiouji-shi Tokyo192	E-mail
Mr. Sanford Schupper	Flatrate Communications Inc. Founder	Tel	Fax	Colorado Springs, CO USA	E-mail
r. Alain Pascaud	France Telecom Engineer	Tel 687-266-6600	Fax 687-266-666	B.P. A1 Noumea, New Caledonia	E-mail
r. J. F. Thomas	France Telecom Japan Co., Ltd. President	Tel 81-3-5226-7777	Fax 81-3-5226-7794	Tambaya Bldg. 9F 3-2-4 Koji-machi, Chiyoda-ku Tokyo 102 JAPAN	E-mail
Mamoru Mitsugi	Fujitsu F.I.P Corporation President	Tel 03-3433-2251	Fax 03-3437-6123	6-1-11 Shinbashi Minato-ku Tokyo105	E-mail PFH00422@niftyserve.or.jp
Jun Maeda	Fujitsu International Engineering Limited Director, General Manager Marketing Department	Tel 044-754-2524	Fax 044-754-2801	4-1-1,Kamiodanaka,Nakahara-ku,kawasakicity,kanagawa211	E-mail
deo Kato	Fujitsu International Engineering Limited Chief Staff, Reserach Department	Tel 044-754-2523	Fax 044-754-2801	4-1-1 Kamiodanaka Nakahara-ku Kawasakishi KAnagawa211	E-mail
suke Ogata	Fujitsu International Engineering Ltd. Fujitsu Overseas Customer Training Center	Tel 044-754-3834	Fax 044-754-3507	4-1-1 Kamiodanaka Nakahara-ku Kawasaki Kanagawa211	E-mail
Yukou Mochida	Fujitsu Laboratories Member of the Board	Tel 045-754-2631	Fax 045-754-2582	4-1-1 Kamiodanaka Nakahara-ku Kawasaki-shi Kanagawa211-88	E-mail mochida@flab.fujitsu.co.jp
Takatoshi Minami	Fujitsu Limited Director	Tel 044-754-3060	Fax 044-754-3524	4-1-1,Kamiodanaka,Nakahara-ku,Kawasaki,Kanagawa211-88	E-mail minami@acsys.ts.fujitsu.co.jp
usa Nakai	Fujitsu Limited	Tel 044-754-8612	Fax 044-754-8516	4-1-1 Ueodanaka Nakahara-ku Kawasaki-shi Kanagawa211-88	E-mail
uji Oba	Fujitsu Limited	Tel 044-754-3063	Fax 044-754-3550	4-1-1,Kamiodanaka,Nakahara-ku,Kawasaki,Kanagawa211-88	E-mail oba@cmg.ts.fujitsu.co.jp
Teijiro Kitamura	Fujitsu Limited General Manager	Tel 044-754-8612	Fax 044-754-8516	4-1-1,Kamiodanaka,Nakahara-ku,Kawasaki,Kanagawa211	E-mail
Yoshiaki Iwai	Fujitsu Limited General Manager	Tel 044-754-8612	Fax 044-754-8516	4-1-1,Kamiodanaka,Nakahara-ku,Kawasaki,Kanagawa211	E-mail
miko Itou	Fujitsu Limited Telecommunication Network Systems Group	Tel 044-754-8612	Fax 044-754-8516	4-1-1 Kamiodanaka Nakahara-ku Kawasaki-shi Kanagawa211	E-mail
hiro Mizokuchi	Fujitsu Limited Engineer	Tel 044-739-1163	Fax 044-739-1765	1-403,Kosugi-cho,Nakahara-ku,Kawasaki,Kanagawa221	E-mail
Hiroshi Takahashi	Fujitsu Limited General Manager	Tel 03-3778-8270	Fax 03-3778-8257	1-20-10,Oi,Shinagawa-ku,Tokyo140	E-mail PDB01242@niftyserve.or.jp
zumi Endo	Fujitsu Limited Senior Project Manager External Affairs Division External Affairs Group	Tel 03-3215-3083	Fax 03-3216-5473	1-6-1,Marunouchi,Chiyoda-ku,Tokyo100	E-mail endo@eag.fujitsu.cojp
Anthony	General Magic	Tel 703-471-0593	Fax 703-471-0594	13102 Weatherrane Way Herndon VA 22021 USA	E-mail
k I. Nakagome	General Offshore Corporation Japan Represetative	Tel 045-773-5266	Fax 045-773-5266	3-3-4 Noukendai Kanazawa-ku, Yokohama-shi Kanagawa236	E-mail
Mr. Robert M. Walp	Genereal Communication Inc. Vice Chairmen	Tel 907-265-5613	Fax 907-265-5676	2550 Denali St. Anchorage AK 99503-2781 USA	E-mail
Ms. Diana Sharpe	Gillet Sharpe Int'l Lawyers Member	Tel 61-2-9262-6550	Fax 61-2-9262-1818	Level 13 The Landmark 345 George Street, Sydney NSW 2000 Australia	E-mail

PTC1997 Mid Year Seminar June 2-4 1997 Attendees List

Mr. Naoko Kurauchi	Global One Director Carrier Services	Tel 81-3-5561-1912	Fax 81-3-5561-1927	9-9 Roppongi 1-chome, Minato-ku, Roppongi First Bldg., 7F Tokyo 106 Japan	E-mail
Kenichi Yamamoto	Global One Co., Ltd. Executive Vice President,Telecom Services Division	Tel 03-5561-1922	Fax 03-5561-1927	1-9-9,Roppongi,Minato-ku,Tokyo106	E-mail /g=k/s=yamamoto/@global-one.net
Shumpei Kumon	GLOCOM Executive Deirector	Tel	Fax		E-mail
Shoji Watanabe	Graduate School of Informatics, Teikyo Heisei University Professor	Tel 045-962-9418	Fax 045-962-0523	2533-78 Naramachi Aoba-ku Yokohama-shi Kanagawa 227	E-mail
Osamu Hayama	Graduate School, University of East Asia Professor	Tel 045-841-7690	Fax 045-841-7688	5-13-17 Hino-minami Kounan-ku Yokohama-shi Kanagawa234	E-mail o-hayama@po.iijnet.or.jp
Mr. Dennis S. Niimi	GTE Hawaiian Tel Vice President-International	Tel 808-546-2345	Fax 808-546-6166	PO Box 2200 Honolulu, HI 96841-0001 USA	E-mail
Mr. Joseph Torres	Guam Public Utilities Commision	Tel	Fax	Guam	E-mail
Hiroshi Hachiya	Hitachi Adbanced Systems, Ltd. Chief Engineer	Tel	Fax 03-5471-2556		E-mail
Shigeo Seki	Hitachi Telecom Technology, Ltd. Senior Chief-Engineer	Tel	Fax 03-5471-2556		E-mail
Ikuo Hoshi	Hitachi Telecom Technology, Ltd. Senior Engineer	Tel	Fax 03-5471-2556		E-mail
Taihei Suzuki	Hitachi, Ltd. Assistant to General Manager	Tel 03-5471-2258	Fax 03-5471-2556	6-27-18,Minmioi,Shinagawa-ku,Tokyo140	E-mail
Chikai Ii	Hitachi, Ltd. Assistant to General Manager	Tel 03-5471-2258	Fax 03-5471-2556	6-27-18,Minamioi,Sinagawa-ku,Tokyo140	E-mail
Kazuhiko Ohmachi	Hitachi, Ltd. Senior Chief Engineer	Tel 03-5471-2258	Fax 03-5471-2556	6-27-18,Minamioi,Sinagawa-ku,Tokyo140	E-mail
Daiji Mitsunaga	Hitachi, Ltd. Engineer	Tel 03-5471-2258	Fax 03-5471-2556	6-27-18,Minamioi,Sinagawa-ku,Tokyo140	E-mail
Naoki Kurihara	Hitachi, Ltd. Engineer	Tel 03-5471-2258	Fax 03-5471-2556	6-27-18,Minamioi,Shinagawa-ku,Tokyo140	E-mail
Hideo Nakazawa	Hitachi, Ltd. Engineer	Tel 03-5471-2258	Fax 03-5471-2556	6-27-18,Minamioi,Sinagawa-ku,Tokyo140	E-mail
Tatsushi Iguchi	Hitachi, Ltd. Senior engineer	Tel 03-5471-2258	Fax 03-5471-2556	6-27-18,MInamioi,Shinagawa-ku,Tokyo140	E-mail
Mr. Ted Shimizu	Hughs Space and Communication Director	Tel 310-364-4064	Fax 310-364-9471	2000 E. El Segundo Blvd. A326 El Segundo CA 90245 USA	E-mail
Mr. Joseph Rougeau	Hughs Telecommunications and Space Assistant Director	Tel 310-568-7789	Fax 310-568-7963	7200 Hughs Terrance CO/C1/B192 Westchester, CA 90045 USA	E-mail
Mr. Kenneth Droze	Humaco Computer Consultant	Tel 81-468-21-1950	Fax 81-467-77-5321	F252 Kanagawa-ken Ayase-shi Fukaya-ogami, Atsugi Base Admin. Bx. 9 Japan	E-mail humaco@kuentos.guam.net
Fumio Nishiwaki	IBJ General Mgr., Systems Department	Tel	Fax		E-mail
Tomoaki Sawada	IBM Japan Director, Strategy and Plan, NC	Tel	Fax		E-mail

TC1997 Mid Year Seminar June 2-4 1997 Attendees List

utsuya Asano	IBM Japan, Ltd. Director, Telecommunications Relations	3-2-12 Roppongi Minato-ku Tokyo106	Tel 03-5563-4344	Fax 03-5563-4913	E-mail
Taeko Kino	IBM Japan, Ltd. Advisory Telecommunications Specialist, Telecommunications Relations	3-2-12 Roppongi Minato-ku Tokyo106	Tel 03-5563-4344	Fax 03-5563-4913	E-mail
ohru Yamayoshi	IBM Japan, Ltd. Program Manager of Users Promotion, System & Network Managed Operation	3-2-12,Roppongi,Minato-ku,Tokyo106	Tel 03-5563-4344	Fax 03-5563-4913	E-mail
omas C. Agoston	IBM Japan, Ltd. Program Manager, Olympic Project Office	3-2-12,Roppongi,Minato-ku,Tokyo106	Tel 03-5563-4344	Fax 03-5563-4913	E-mail
roaki Kawamura	IBM Japan, Ltd. Opperations Director, AP Network Services	3-2-12,Roppongi,Minato-ku,Tokyo106	Tel 03-5563-4344	Fax 03-5563-4913	E-mail
Norihiko Minato	IBM Japan, Ltd. Manager, Network Services Marketing Asia Pacific IBM Grobal Services	3-2-12,Roppongi,Minato-ku,Tokyo106	Tel 03-3505-4590	Fax 03-3505-9645	E-mail
shiya Ozaki	IBM Japan, Ltd. Program Manager of External Programs, AP Public Affairs IBM Asia Pacific	3-2-12,Roppongi,Minato-ku,Tokyo106	Tel 03-5563-4344	Fax 03-5563-4913	E-mail
nji Andoh	IBM Japan, Ltd. Program Manager, Network Services AP Operations	3-2-12,Roppongi,Minato-ku,Tokyo106	Tel 03-5563-4344	Fax 03-5563-4913	E-mail
chi Yoshifusa	IBM Japan, Ltd. Network Services AP Operations	3-2-12,Roppongi,Minato-ku,Tokyo106	Tel 03-5563-4344	Fax 03-5563-4913	E-mail
Masao Miyoshi	IBM Japan, Ltd. Technical Solution Project Manager, Network Services AP Operations	3-2-12,Roppongi,Minato-ku,Tokyo106	Tel 03-5563-4344	Fax 03-5563-4913	E-mail
. Jeffrey Gee	IDX International Executive V.P. & COO	12015 Lee Jackson Highway Fairfax, VA 22033-3300 USA	Tel 703-385-0346	Fax 703-385-9134	E-mail
. Tomihiro Kobata	Independent Consultant	3-6-6 Honcho Hoya-shi, Tokyo 202 Japan	Tel 81-4-2464-4372	Fax 81-4-2464-4372	E-mail
Kageo Nakano	Infocom Research, Inc. Managing Director	1-12-31,Minamiaoyama,Minato-ku,Tokyo107	Tel 03-3470-7500	Fax 03-3470-7520	E-mail
Sumito Fujioka	Infocom Research, Inc. Director	1-12-31,Minamiaoyama,Minato-ku,Tokyo107	Tel 03-3470-7500	Fax 03-3470-7520	E-mail
i Takekawa	Infocom Research, Inc. Researcher	1-12-31,Minamiaoyama,Minato-ku,Tokyo107	Tel 03-3470-7500	Fax 03-3470-7520	E-mail
zuhiko Kushima	Information and Communication System Laboratories, NTT Senior Research Engineer, Supervisor	1-1 Hikarino-oka Yokohama Kanagawa239	Tel 0468-59-2751	Fax 0468-55-1152	E-mail
Kazuo Haraoka	Information Broadcasting Laboratories, Inc. Research Scientist	1-1-1,Nishiasakusa,Taitou-ku,Tokyo111	Tel 03-5826-7383	Fax 03-5826-7382	E-mail kharaoka@ibl.co.jp
Dr. Eui K. Koh	INTELSAT Group Director for Asia	Asia/Pacific Office Shell Tower level 37, 50 Raffles Place 048623 Singapore	Tel 65-320-8511	Fax 65-320-8455	E-mail eui.koh@intelsat.int
buhisa Iida	International Digital Communications Inc. Corporate Planning Office, Manager.	5-20-8,Asakusabashi,Taitou-ku,Tokyo111-61	Tel 03-5820-5081	Fax 03-5820-5363	E-mail niida@idc.co.jp
hiaki Yosimoto	Itochu Corporation Strategic Business Development Department	2-5-1,Kitaaoyama,Minato-ku,Tokyo107-77	Tel 03-3497-3075	Fax 03-3497-3077	E-mail yoshiaki.yoshimoto@tokkz.itochu.co.jp
Daigo Maeda	Itochu Corporation Satellite business Section	2-5-1,Kitaaoyama,Minato-ku,Tokyo107-77	Tel 03-3497-3175	Fax 03-3497-3177	E-mail daigo.maeda@toknu.itochu.co.jp
Syunsuke Noda	Itochu Corporation Strategic Business Development Department	2-5-1,Kitaaoyama,Minato-ku,Tokyo107-77	Tel 03-3497-2419	Fax 03-3497-4181	E-mail syunsuke.noda@tokkv.itochu.co.jp

TC1997 Mid Year Seminar June 2-4 1997 Attendees List

Etsuko Chiba	JANCPEC	Tel	Fax		E-mail
Minoru Yoshida	Japan Approvals Insutitute for Telecommunications Equipment President	Tel 03-3591-4300	Fax 03-3591-4355	1-1-3,Toranomon,Minato-ku,Tokyo105	E-mail
oshiro Nagasawa	Japan Approvals Insutitute for Telecommunications Equipment General Manager, Equipment Approvals Department	Tel 03-3591-4300	Fax 03-3591-4355	1-1-3 Toranomon Minato-ku Tokyo105	E-mail
ingo Tanaka	Japan Approvals Insutitute for Telecommunications Equipment Senior Manager, Equipment Approvals Department	Tel 03-3591-4300	Fax 03-3591-4355	1-1-3,Toranomon,Minato-ku,Tokyo105	E-mail
Mitsuaki Tsukada	Japan Radio Co., Ltd. Deputy General Manager	Tel 0422-45-9291	Fax 0422-45-9396	5-1-1,Shimorenjan,Mitaka-shi,Tokyo181	E-mail
Noboru Ohashi	Japan Radio Co., Ltd. Assistant General Manager	Tel 0422-45-9291	Fax 0422-45-9396	5-1-1,Shimorenjan,Minataka-shi,Tokyo181	E-mail
taku Onda	Japan Radio Co., Ltd. Manager	Tel 0422-45-9291	Fax 0422-45-9396	5-1-1,Shimorenjan,Mitaka-shi,Tokyo181	E-mail
kuya Yoshida	Japan Satellite Systems Inc. President	Tel 03-5511-7773	Fax 03-3597-0601	1-26-5,Toranomon,Minato-ku,Tokyo105	E-mail t-yoshida@crp.jcsat.co.jp
Akihide Kinoshita	Japan Satellite Systems Inc. General Manager, Marketing Interenet Department	Tel 03-5511-7722	Fax 03-5512-7180	1-26-5,Toranomon,Minato-ku,Tokyo105	E-mail a-kinoshita@crp.jcsat.co.jp
Toru Kamahara	Japan Telecoms Eng & Consl Svc EXECUTIVE VICE PRESIDENT	Tel 03-3495-5211	Fax 03-3495-5219	7-25-9,Nishigotanda,Shinagawa-ku,Tokyo141	E-mail
motsu Yamagata	Japan Telecoms Eng & Consl Svc EXECUTIVE VICE PRESIDENT	Tel 03-3495-5211	Fax 03-3495-5219	7-25-9,Nishigotanda,Sinagawa-ku,Tokyo141	E-mail
uneo Okabe	Japan Telecoms Eng & Consl Svc VICE PRESIDENT	Tel 03-3495-5211	Fax 03-3495-5219	7-25-9,Nishigotanda,Sinagawa-ku,Tokyo141	E-mail
Mr. John A. Spence	John A. Spence & Associates	Tel 61-2-9144-6318	Fax 61-2-9449-2538	11 Handley Av. Turramurra Sydney NSW 2074 Australia	E-mail
tsumi Yamamoto	KDD Engineering And Consulting, Inc. DIRECTOR, CONSULTING, ENGINEERING & CONSULTING DEPARTMENT	Tel 03-3794-8236	Fax 03-3794-8209	2-1-23,Nakameguro,Meguro-ku,Tokyo153	E-mail
roaki Konish	KDD Engineering And Consulting, Inc. SENIOR MANAGER, ENGINEERING & CONSULTING DEPARTMENT	Tel 03-3794-8236	Fax 03-3794-8209	2-1-23,Nakameguro,Meguro-ku,Tokyo153	E-mail
suhisa Ishikawa	KDD Network Systems Co.,Ltd. Senior Adviser	Tel 0466-34-2051	Fax	1598 TUjido Fujisawa-shi Kanagawa 251	E-mail
Yu Hashiguchi	KDD Reserch Institute, Inc. Resercher, Communications Resarch Department	Tel 03-3347-6462	Fax 03-3347-6470		E-mail
deo Ishihara	KDD Submarine Cable Systems Inc. Executive Vice President	Tel 03-3347-7122	Fax 03-3347-7727	2-3-2-25F,Nishishinjuku,Shinjuku-ku,Tokyo163-03	E-mail
saru Motoyuki	KDD Submarine Cable Systems Inc. Senior Manging Director	Tel 03-3347-7122	Fax 03-3347-7727	2-3-2-25F,Nishishinjuku,Shinjuku-ku,Tokyo163-03	E-mail
sei Narimatsu	KDD Submarine Cable Systems Inc. Deputy Manager	Tel 03-3347-7122	Fax 03-3347-7727	2-3-2,Nishisinjuku,Sinjuku-ku	E-mail
Tohru Ohta	Kokusai Denshin Denwa Executive Vice President	Tel	Fax		E-mail
suo Hashimoto	Kokusai Denshin Denwa Co., Ltd. Director, International Affairs Department	Tel 03-3347-6462	Fax 03-3347-6470	2-3-2,Nishishinjuku,Shinjuku-ku,Tokyo163	E-mail

BEST COPY AVAILABLE

PTC1997 Mid Year Seminar June 2-4 1997 Attendees List

Naoki Kinoto	Kokusai Denshin Denwa Co., Ltd. Director, Business Communications Department	Tel 03-3347-6462	Fax 03-3347-6470	2-3-2,Nishishinjuku,Shinjuku-ku,Tokyo163	E-mail
Takao Ishihara	Kokusai Denshin Denwa Co., Ltd. Director, Yokohama Office	Tel 03-3347-6462	Fax 03-3347-6470		E-mail
Junichi Onozawa	Kokusai Electric Co., Ltd. Manager, Telecommunication System Div.	Tel 03-3365-9164	Fax 03-3365-9169	3-14-20 Higashi-Nakano Nakano-ku Tokyo164	E-mail jonozawa@hq.kokusaidenki.co.jp
etsuhisa Ushio	Kokusai Telecommunications Installation Co.,Ltd. Executive Vice President	Tel 03-3794-8275	Fax 03-3794-8487	2-1-23 Nakameguro Meguro-ku Tokyo153	E-mail ushio@kti.co.jp
Mr. Nam-Jin Cho	Korea Telecom Chief Executive	Tel 82-652-83-0001	Fax 82-652-84-0002	Chonbuk Regional Telecom, Corp. 70-1 3-ka Kyungwon-Dong Wansan-ku Chonj	E-mail
Dr. Whajoon Cho	Korea Telecom Sr. Researcher	Tel 82-2-750-5193	Fax 82-2-725-2821	100 Sejong-no Chongno-ku Seoul, 110-777 KOREA	E-mail whajoon@ktweb.kotel.co.kr
George E. Darby	Law offices of George E. Darby	Tel	Fax	Box 61450 Honolulu, HI 96839-1450 USA	E-mail
akeshi Endoh	Marubeni Telecom Co., Ltd. Executive Vice President	Tel 03-3238-1401	Fax 03-3238-1510	Kokusai Chusei Kaikan 14,Goban-cho,Chiyoda-ku,Tokyo102	E-mail mtc1401@nisiq.net
utaka Sato	Matsushita Communication Industrial Co., Ltd. Senior Vice President	Tel 03-3438-5441	Fax 03-3438-9212	1-1-30 Shiba Daimon Minato-ku Tokyo105	E-mail
Tadao Hamaguchi	Matsushita Communication Industrial Co., Ltd. General Manager	Tel 03-3438-5441	Fax 03-3438-9212	1-1-30,Shibadaimon,Minato-ku,Tokyo105	E-mail
Katsuo Akiyama	Matsushita Communication Industrial Co., Ltd. General Manager	Tel 03-3438-5441	Fax 03-3438-9212	1-1-30,Shibadaimon,Minato-ku,Tokyo105	E-mail
tsunobu Kato	Matsushita Communication Industrial Co., Ltd. Senior Engineer	Tel 03-3438-5441	Fax 03-3438-9212	1-1-30,Shibadaimon,Minato-ku,Tokyo105	E-mail
Shinichi Sekiguchi	Matsushita Communication Industrial Co., Ltd. Manager	Tel 03-3438-5441	Fax 03-3438-9212	1-1-30,Shibadaimon,Minato-ku,Tokyo105	E-mail
Kiichiro Iida	Matsushita Communication Industrial Co., Ltd. General Manager	Tel 03-3438-5441	Fax 03-3438-9212	1-1-30,Shibadaimon,Minato-ku,Tokyo105	E-mail
dehiko Kudou	Matsushita Communication Industrial Co., Ltd. Manager, Sales Promotions Division	Tel 03-3438-5403	Fax 03-3438-9211	1-1-30,Shibadaimon,Minato-ku,Tokyo105	E-mail po2804@plt.mci.mei.co.jp
igenori Takahashi	Matsushita Electric Industrial Co., Ltd. Business Planning Dept. Tokyo Branch	Tel 03-3436-6007	Fax 03-5473-0225	1-1-2,Shibakouen,Minato-ku,Tokyo105	E-mail PAN15728@pas.mei.co.jp
Hisashi Yoshikawa	MITI Director	Tel	Fax		E-mail
Shinichiro Kobatashi	Mitsubishi Corporation General Manager, Telecommunication Network Business, Japan Unit	Tel 03-3210-7361	Fax 03-3210-7359	2-6-3,Marunouchi,Chiyoda-ku,Tokyo100-86	E-mail
kashi Kadowaki	Mitsubishi Electric Corporation General Manager	Tel 03-3218-3287	Fax 03-3218-3314	2-2-3,Marunouchi,Chiyoda-ku,Tokyo100	E-mail kadowaki@du.hon.melco.co.jp
tsugoro Yamashita	Mitsubishi Electric Corporation Manager,	Tel 03-3218-3329	Fax 03-3218-2898	2-2-3,Marunouchi,Chiyoda-ku,Tokyo100	E-mail
Keigo Komuro	Mitsubishi Electric Corporation Chief Adviser	Tel 03-3218-3329	Fax 03-3218-2898	2-2-3 Marunouchi Chiyoda-ku Tokyo100	E-mail
Kazuo Mitamura	Mitsubishi Electric Corporation Senior Corporate Staff	Tel 03-3218-3329	Fax 03-3218-2898	2-2-3,Marunouchi,Chiyoda-ku,Tokyo100	E-mail

PTC1997 Mid Year Seminar June 2-4 1997 Attendees List

Katsuhiko Aoki	Mitsubishi Electric Corporation General Manager	Tel 03-3218-3329	Fax 03-3218-2898	2-2-3,Marunouchi,Chiyoda-ku,Tokyo100 E-mail
Kunio Tejima	Mitsubishi Electric Corporation Manager	Tel 03-3218-3329	Fax 03-3218-2898	2-2-3,Marunouchi,Chiyoda-ku,Tokyo100 E-mail
Yukio Miwa	Mitsubishi Research Institute, Inc. GENERAL MANAGER	Tel 03-3277-0758	Fax 03-3277-3473	2-3-6,Otemachi,Chiyoda-ku,Tokyo100 E-mail miwasan@mri.co.jp
kuo Yamada	Mitsubishi Reserach Institute, Inc. Managing director	Tel 03-3277-0510	Fax 03-3277-0518	2-3-6,Otemachi,Chiyoda-ku,Tokyo100 E-mail i-yamada@mri.co.jp
eiko Noda	MPT State Secretary	Tel	Fax	E-mail
Norimasa Hasegawa	MPT Director-General, International Affairs Department	Tel	Fax	E-mail
Eiichi Yoshikawa	NEC Senior Vice President	Tel	Fax	E-mail
Kenichi Tsukioka	NEC Corporation Senior Manager, Engineering Planning & Coordination Division	Tel 03-3798-9529	Fax 03-3798-6598	5-7-1 Shiba Minato-ku Tokyo 108 E-mail
Koji Takehira	NEC Corporation Manager	Tel 044-435-5366	Fax 044-435-5451	1753,Simonumabe,Kawasaki,Kanagawa211 E-mail takehira@trd.tmg.nec.co.jp
Toru Hamanaka	NEC Corporation Assistant General Manager	Tel 044-435-5296	Fax 044-435-5450	1753,Simonumabe,Nakahara-ku,Kawasaki,kanagawa211 E-mail hamanaka@trd.tmg.nec.co.jp
Masujiro Sato	NEC Corporation Maneger	Tel 045-939-2316	Fax 045-939-2349	4035,Ikebe-cho,Tuduki-ku,Yokohama,Kanagawa224 E-mail sato-mas@ccmail.mod.yh.nec.co.jp
oboru Ozawa	NEC Corporation Chief Manager PC Product Planning	Tel 0423-33-5183	Fax 0423-33-1477	1-10,Nichishin-cho,Huchu,Tokyo183 E-mail Noza@pc1.fc.nec.co.jp
Hiraku Sakuma	NEC Corporation Senior Manager	Tel 03-3798-6596	Fax 03-3798-6598	5-7-1,Shiba,Minato-ku,Tokyo108 E-mail sakuma@epc.ho.nec.co.jp
Takeo Ozawa	NEC Corporation Manager	Tel 0423-33-5114	Fax 0423-33-5207	1-10,Nichishin-cho,Huchu,Tokyo183 E-mail ozawa@uxd.fc.nec.co.jp
otoki Sekiya	NEC Corporation Assistant Manager	Tel 03-3798-6730	Fax 03-3798-0726	5-7-1,Shiba,Minato-ku,Tokyo108 E-mail
iroji Konishi	NEC Corporation Senior Manager	Tel 03-3798-6681	Fax 03-3798-6684	5-7-1 Shiba Minato-ku Tokyo108 E-mail
Hiroshi Ishibashi	NEC Corporation Manager	Tel 03-3798-7428	Fax 03-3798-7339	5-7-1,Shiba,Minato-ku,Tokyo108 E-mail
Takao Furuya	NEC Corporation	Tel 03-3798-6075	Fax 03-3798-6028	5-7-1,Shiba,Minato-ku,Tokyo108 E-mail furu@mmsv.ho.nec.co.jp
atoru Shinozaki	NEC Corporation Senior Manager	Tel 045-939-2242	Fax 045-939-2192	4035,Ikebe-cho,Tuduki-ku,Yokohama,Kanagawa224 E-mail shinozaki@pl.msc.yh.nec.co.jp
azuyoshi Fukumura	NEC Corporation Senior Manager	Tel 03-5476-11[illegible]7	Fax 03-5476-1005	2-11-5,Shibaura,Minato-ku,Tokyo108 E-mail fukumura@ccs.mt.nec.co.jp
Seiichiro Shigaki	NEC Engineering, Ltd. Senior program Maneger	Tel 044-433-2443	Fax 044-433-1346	499-1,IchinoTsubo,Nakahara-ku,Kawasaki,Kanagawa211 E-mail shigaki@neec.tmg.nec.co.jp
Ikuro Sato	NEC Engineering, Ltd. Senior Vice President	Tel 045-939-2877	Fax 045-939-2846	4475,Ikebe-cho,Tuduki-ku,Yokohama,Kanagawa E-mail sato@rcg.neec.yh.nec.co.jp

TC1997 Mid Year Seminar June 2-4 1997 Attendees List

Dr. Eitel M. Rizzoni	NETPLAN International Telecoms Consultant	Tel 202-659-2568	Fax 202-331-9822	The Gibson House Ste 308, 1140 23rd St. NW Washington DC 20037 USA	E-mail
kashi Furuya	NHK Deputy Director, Planning Division, Engineering Administration Dpt.	Tel 03-5478-2295	Fax 03-3485-0952	2-2-1,Jinnan,Shibuya-ku,Tokyo150	E-mail
yoaki Hasegawa	NHK Executive Deirector-General	Tel 03-3465-1111	Fax 03-3485-0952	2-2-1,Jinnnan,Shibuya-ku,Tokyo150	E-mail
Y shio Honda	Nippon Ericsson K.K. Assistant Manager, Telecom Standards and Regulations	Tel 03-3222-4595	Fax		E-mail
Yasuharu Kosuge	Nippon Telecommunications Consulting Co., LTD. Division Manager	Tel 044-900-7540	Fax 044-900-7545	6-26-10,Nakanoshima,Tama-ku,Kawasaki,Kanagawa214	E-mail kosuge@ntc.co.jp
K yoshi Yamamoto	Nippon Telegraph and Telephone Corporation Senior Manager, International Affairs Headquarters	Tel 03-5353-5211	Fax 03-5354-0707	3-20-2,Nishishinjuku,Shinjuku-ku,Tokyo160	E-mail
Y ichi Takashima	Nippon Telegraph and Telephone Corporation Vice President, International Affairs Headquarters	Tel 03-5353-5211	Fax 03-5354-0707	3-20-2,Nishishinjuku,Shinjuku-ku,Tokyo160	E-mail
Shinji Nakamura	Nippon Telegraph and Telephone Corporation Senior Manager, International Affairs Headquarters	Tel 03-5353-5211	Fax 03-5354-0707	3-20-2,Nishisinjuku,Sinjuku-ku,Tokyo160	E-mail
Tomio Hosoda	Nippon Telegraph and Telephone Corporation Senior Manager, International Affairs Headquarters	Tel 03-5353-5211	Fax 03-5354-0707	3-20-2,Nishishinjuku,Shinjuku-ku,Tokyo160	E-mail
M koto Fukushima	NK-EXA Corporation. Director Network System Division	Tel 044-540-2370	Fax 044-540-2449	580,Horikawa-cho,Saiwai-ku,Kawasaki,Kanagawa210	E-mail fukusima@hrd.nk-exa.co.jp
N hiro Yoshikawa	Nomura Research Institute, Ltd. Senior Researcher Fellow	Tel 045-336-7418	Fax 045-336-1404	134,Koube-cho,Hodogaya-ku,Yokohama,Kanagawa240	E-mail m-yoshikawa@nri.co.jp
Yasuhiko Arai	Nomura Research Institute, Ltd. Senior Consultant	Tel 045-336-7065	Fax 045-336-1404	134,Godo-cho,Hodogaya-ku,Yokohama,Kanagawa134	E-mail y-arai@nri.co.jp
Takeshi Shinohara	Nomura Research Institute, Ltd. New Social Systems Division, General Manager	Tel 045-336-8445	Fax 045-336-1405	134,Koube-chou,Hodogaya-ku,Yokohamacity,Kanagawa240	E-mail t-shinohara@nri.co.jp
M ami Kato	NTT General Manager	Tel 03-5359-4371	Fax 03-5359-1209	3-19-2,Nishishinjuku,Shinjuku-ku,Tokyo163-19	E-mail m-kato@tec.hqs.ntt.co.jp
Y hitaka Kawashima	NTT Senior Manager	Tel 03-3500-9340	Fax 03-3500-6032	1-1-6,Uchisaiwai-cho,Chiyoda-ku,Tokyo100-19	E-mail kawashima@sw3.bch.ntt.co.jp
Hiromu Shioyama	Ocean Cable Co., Ltd. Representative Managing Director	Tel 03-5441-6030	Fax 03-5441-6067	1-2-1,Sibaura,Minato-ku,Tokyo108	E-mail
Toshio Konishi	Ocean Cable Co., Ltd. General Manager/Director, Marketing Headquaters	Tel 03-5441-6030	Fax 03-5441-6067	1-2-1 Shibaura Minat-ku Tokyo108	E-mail
A a Mochizuki	Ocean Cable Co., Ltd. General Manager, Submarine Cable Marketing Division	Tel 03-5441-6030	Fax 03-5441-6067	1-2-1,Shibaura,Minato-ku,Tokyo108	E-mail
H yuki Yoshioka	Ocean Cable Co., Ltd. Manager, Submarine Cable Marketing Division	Tel 03-5441-6030	Fax 03-5441-6067	1-2-1 Shibaura Minato-ku Tokyo108	E-mail
Ikuo Matsuoka	Oki Electric Industry Co., Ltd. General Manager,Transmission System Division	Tel 03-3454-2111	Fax 03-3798-7636	4-10-16,Shibaura,Minato-ku,Tokyo108	E-mail
Makoto Kawase	Oki Electric Industry Co., Ltd. Senior Manager, Transmission System Division	Tel 03-3454-2111	Fax 03-3798-7636	4-10-16,Shibaura,Minato-ku,Tokyo108	E-mail
Y hiro Sato	Oki Electric Industry Co., Ltd. Director, OKITEC	Tel 03-3454-2111	Fax 03-3798-7636	4-10-16,Shibaura,Minato-ku,Tokyo108	E-mail

PTC1997 Mid Year Seminar June 2-4 1997 Attendees List

Akira Habu	Oki Electric Industry Co., Ltd. General Manager, Strategic Planning Office, Telecommunications Group	Tel 03-3454-2111	Fax 03-3798-7636	4-10-16,Shibaura,Minato-ku,Tokyo108	E-mail
Yoshikazu Tachi	Omron Corporation Director	Tel 03-3436-7216	Fax 03-3436-7133	3-4-10,Toranomon,Minato-ku,Tokyo105	E-mail
Mr. Leigh Baker	Oracle Commuications Director-Telecommunication Industry	Tel 61-3-9209-1690	Fax 61-3-9682-7250	Level 7, 324 St. Kilda Rd. Melbourne, Vic. 3004 Australia	E-mail lbaker@au.oracle.com
Hisatoshi Goshima	Origin Electric Co., Ltd. Director	Tel 03-3983-7111	Fax 03-3988-6369	1-18-1,Takada,Toshima-ku,Tokyo171	E-mail hgoshima@origin.co.jp
Mr. Richard J. Barber	Pacific Telecommunications Council Executive Director	Tel 808-941-3789	Fax 808-944-4874	2454 S Beretanis St Ste 302 Honolulu, HI 96826-1596USA	E-mail
Ms. Sharon Nakama	Pacific Telecommunications Council Conference & Seminar Manager	Tel 808-941-3789	Fax 808-944-4874	2454 S Beretania St Ste 302 Honolulu, HI 96826-1596 USA	E-mail
Mr. Richard D. Taylor	Pennsylvania State University School of Communications, Palmer Chair of Telecom Stud.	Tel 814-863-1482	Fax 814-863-6119	301 James Bldg. Univ. Park, PA 16802 USA	E-mail
Mr. Nestor Virata	Phillipine Long Distance Tel Senior Vice President	Tel 63-2-814-3301	Fax 63-2-818-2407	PLDT Towers Ayala Avenue, Makati, Manila, Philippines	E-mail
Yasukuni Kotaka	PTC Chairman Emeritus	Tel 03-3498-6506	Fax 03-3796-6598	5-7-1 Shiba, Minato-ku	E-mail
Kiyoharu Tsuruta	PTC Chairman Emeritus	Tel 0462-61-4500	Fax 0462-65-2361	1-5-4 Hukamihigashi, Yamato-shi, kanagawa 134	E-mail
Hiyoshi Yokogawa	PTC Vice President	Tel 0467-25-3478	Fax 0467-23-7944	6-15-22 Jyoumyouji, Kamakura-shi, Kanagawa 248	E-mail
Yasuo Koseki	PTC Chairman Emeritus	Tel	Fax		E-mail
Dan Wedemeyer	PTC Vice President	Tel	Fax		E-mail
Moriya Koyama	PTC JC Chairman, PTC Japan Committee	Tel 03-3769-6811	Fax 03-3452-7600	2-31-19 Banzai bldg. Shiba, Minato-ku, Tokyo 105	E-mail
unkyo Fujieda	Re Gis inc. President&CEO	Tel 044-201-5210	Fax 044-200-7091	1-53 17F Nisshincho Kawasaki-ku Yokohama Kanagawa210	E-mail jack_fujieda@re-gis.com
Hideya Seike	Research Institute of Telecommunications and Economics Director	Tel 03-3237-2854	Fax 03-3237-2822	3-1-1-6F,Kudanminami,Chiyoda-ku,Tokyo102	E-mail seike@rite-i.or.jp
Takahiro Kawamata	Research Institute of Telecommunications and Economics Associate Senior Researcher	Tel 03-3237-2854	Fax 03-3237-2822	3-1-1,Kudanminami,Chiyoda-ku,Tokyo102	E-mail kawamata@rite-i.or.jp
Muneshige Kobayashi	Reserach Institute of Telecommunications and Economics, Japan	Tel 03-3237-2817	Fax 03-3237-2210	2-9-4 Kudan-minami Chiyoda-ku Tokyo102	E-mail
ae Nakase	Reserach Institute of Telecommunications and Economics, Japan	Tel 03-3237-2853	Fax 03-3237-2210	2-9-4,Kudanminami,Chiyoda-ku,Tokyo120	E-mail
vao Otani	Ricos Co., Ltd. Executive Vice President	Tel 06-444-3683	Fax 06-444-0977	1-24-15 Edobori Nishi-ku Osaka-shi Osaka550	E-mail
Mr. Peter Andersen	San Diego State University Professor	Tel	Fax	San Diego, CA USA	E-mail
Mr. Jung L. Mok	Senior Managing Director SK Telecom	Tel 82-2-3709-1593	Fax 82-2-3709-1599	267 5-ka Nmbaemuno chungmg-Gu Seoul Korea	E-mail

PTC1997 Mid Year Seminar June 2-4 1997 Attendees List

Jung L. Mok	SK Telecom Senior Executive Vice President	Tel	Fax	E-mail
Ms. Jong Ah Min	SK Telecom External Corporation Team	Tel 82-2-3709-1518	Fax 82-2-3709-1599	13F Namsan Green Bldg, #267 5-ka Namdaemun-Ro Jung-ku Seoul 100-095 Rep E-mail
Takatoshi Ando	Softopia Japan Vice Chairman	Tel	Fax	E-mail
r. Philip Bossert	Strategic Info Solutions Inc President & Senior Consultant	Tel 808-537-5523	Fax 808-524-7211	239 Merchant Street Honolulu, HI 96813-2923 USA E-mail
Goichiro Nagai	System Industrial Laboratory Co., Ltd. President	Tel 03-3292-7816	Fax 03-3292-7817	1-15-11,Kandanishiki-cho,Chiyoda-ku,Tokyo101 E-mail QYF00700@niftyserve.or.jp
Shigeo Yoshikawa	Technical Reserach Lab, NHK Exec. Research Engineer, Science & Technical Research Lab	Tel	Fax	E-mail
Toru Adachi	Telecommunication Network Lab, NTT Director, Telecommunication Network Lab	Tel	Fax	E-mail
r. Anthony Gardiner	Teleconult/Deloitte & Touche Asssociate	Tel 604-601-3030	Fax 604-687-7289	#200-1100 Melville St. Vancouver, V6E-4A6 Canada E-mail
Yukiyasu Suguri	Telematique Int'l Res, Labs. Inner Auditor	Tel 0425-97-0659	Fax 0425-88-7021	1314-4, Hirai, Hinodecyou, Nishitama-gun Tokyo190-01 E-mail
Karl Rossiter	Television New Zealand	Tel	Fax	E-mail
r. Karl K. Rossiter	Television New Zealand Ltd. Business Development Manager	Tel 64-6-753-3030	Fax 64-6-753-2999	PO Box 3819 Auckland, New Zealand E-mail
r. Owen Best	Telstra Corporation Limited Vice President Japan	Tel 81+6-3263-5185	Fax 81+3-3263-5514	1-10-13 Kojimachi, Chiyoda-ku, Arche Kojimachi Bldg. 5F Tokyo 102 Japan E-mail
Kosaku Ota	The Furukawa Electric Co., Ltd. Manager, Multimedia Development Div, Information System Group	Tel 03-3286-3419	Fax 03-3286-3708	2-6-1,Marunouchi,Chiyoda-ku,Tokyo100 E-mail
Isamu Ohishi	The Furukawa Electric Co., Ltd. Senior Manager, Multimedia Development Div, Information System Group	Tel 03-3286-3419	Fax 03-3286-3708	2-6-1,Marunouchi,Chiyoda-ku,Tokyo100 E-mail
kihiro Fueta	The Furukawa Electric Co., Ltd. Development Manager, Multimedia Development Div, Information System Group	Tel 03-3286-3419	Fax 03-3286-3708	2-6-1,Marunouchi,Chiyoda-ku,Tokyo100 E-mail
aruo Ando	The Industrial Bank of Japan. Limited.	Tel 03-3347-6462	Fax 03-3347-6470	E-mail
Akira Hosoda	The Institute For Future Technology President	Tel 03-5245-1015	Fax 03-5245-1062	2-6-11-3,4F,Hukagawa,Koutou-ku,Tokyo135 E-mail
Yasunori Honma	The International Bank of Japan Limited. Senior Deputy General Manager, Systems Department	Tel 03-5275-6511	Fax 03-5275-7321	E-mail
higeru Kato	Tokai Rika Co., Ltd. Project General Manager	Tel 0587-95-9034	Fax 0587-95-6641	1,Oazatoyodaunoda,Oguchi-cho,Niwa-gun,Aichi480-01 E-mail shigeru.katou@exc.tokai-rika.co.jp
oshiya Iribe	Tokyo Digital Phone Co., Ltd. Manager	Tel 03-5360-2220	Fax 03-5360-2279	34 Shinanomachi Shinjuku-ku Tokyo160 E-mail
Susumu Hino	Toshiba Corporation Senior Manager	Tel 03-3457-3089	Fax 03-5444-9263	1-1-1,Shibaura,Minato-ku,Tokyo105-11 E-mail 000095030371@tg-mail.toshiba.co.jp
Yutaka Ohfude	Toshiba Information Systems(Japan) Corporation Assistant to General Manager	Tel 044-200-5171	Fax 044-200-5299	7-1,Nichishin-cho,Kawasaki-ku,Kawasaki,Kanagawa210 E-mail tj5898@tjsys.co.jp

PTC1997 Mid Year Seminar June 2-4 1997 Attendees List

ensuke Nagame	TOYOTA Requirements of telecom carriers	Tel	Fax	E-mail	
Takuji Nakayama	Toyota Mortor Coporation General Manager, Telecommunications Business & Research Division	Tel 0565-23-5650	Fax '—ŧ½ÞD	E-mail	
Hiroaki Yoshida	Toyota Mortor Coporation Project General Manager, Telecommunications Business & Research Division	Tel 0565-23-5650	Fax '—ŧ½ÞD	E-mail	
akashi Usui	Toyota Mortor Coporation General Manager, Telecommunications Business & Research Division	Tel 0565-23-5650	Fax '—ŧ½ÞD	E-mail	
r. Brian White	U of HI	Tel	Fax	E-mail	
Takako Yamada	Yamagata Univ. Dept. of Literature and Social Sciences Associate Professor	Tel 0236-28-4281	Fax 0236-28-4281	E-mail takako@human.kj.yamagata-u.ac.jp	1-4-12,Koshirakawa-cho,Yamagata-shi,Yamagata990
Kazuo Yamada	Yazaki Corporation Senior Assistant Manager, Info-Telematics R&D Division	Tel 0559-97-4040	Fax 0559-97-3335	E-mail	1500,Onjuku,Susono-shi,Sizuoka410-11
kio Nakata	Yazaki Corporation Deputy General Manager	Tel 0559-97-4040	Fax 0559-97-3335	E-mail	1500,Onjuku,Susono-shi,Sizuoka410-11
higenori Yamauchi	Yazaki Corporation Deputy General Manager	Tel 0559-97-4040	Fax 0559-97-3335	E-mail	1500,Onjuku,Susono-shi,Sizuoka410-11
Yasutaka Hasegawa	Yazaki Corporation Deputy Manager	Tel 0559-97-4040	Fax 0559-97-3335	E-mail	1500,Onjuku,Susono-shi,Sizuoka410-11
Hidenobu Takahide	Yokohama City The Mayor of Yokohama	Tel	Fax	E-mail	

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